School Shop

vol. IX no. 6

FEBRUARY, 1950

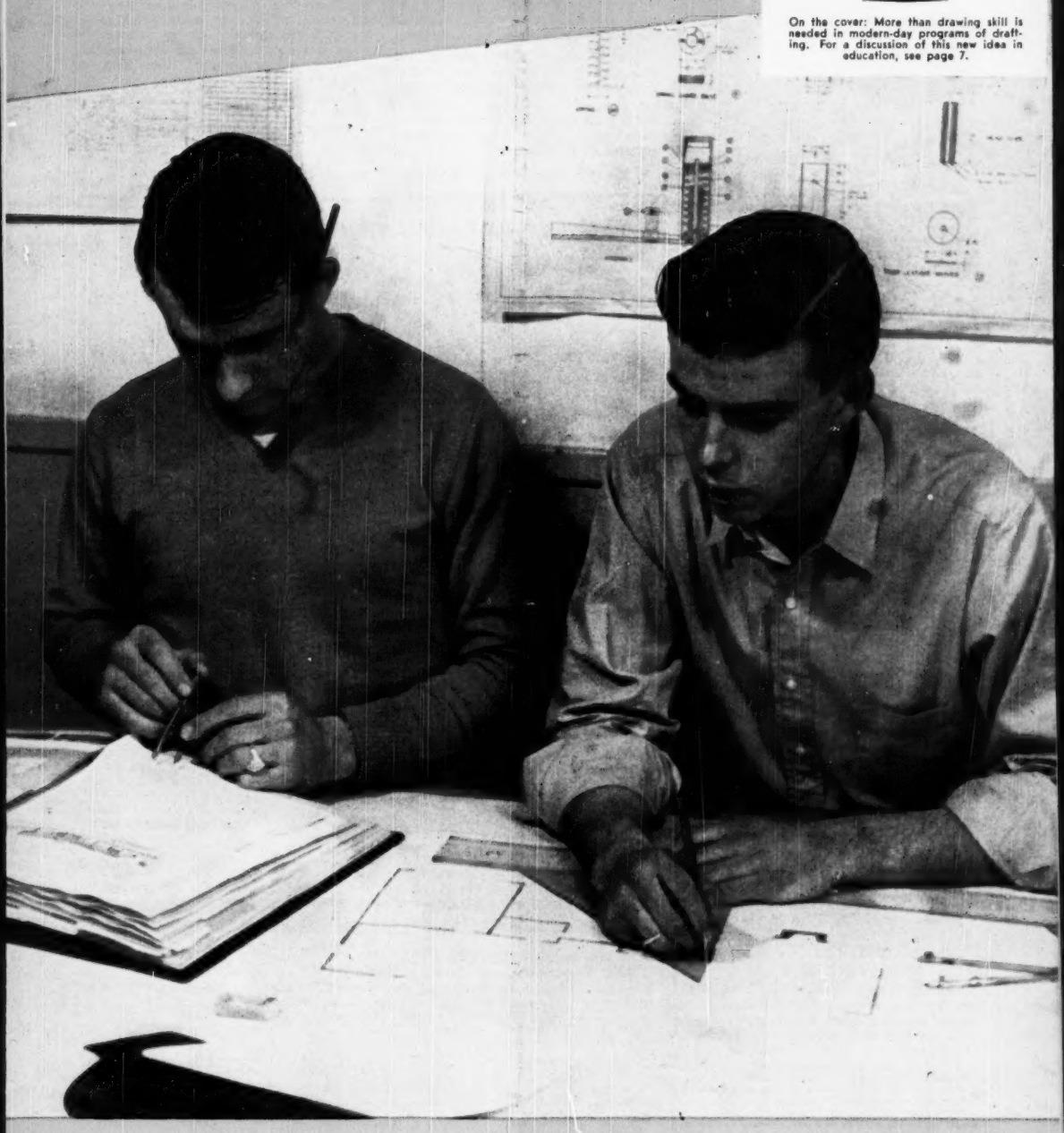
A New Kind of Drafting?
by Herbert E. Welch

Adjustable Boring Bar
by Clyde B. Healton

What's Your P.Q.?
by Stuart Anderson

Teaching Tools
by John F. Nowak

On the cover: More than drawing skill is needed in modern-day programs of drafting. For a discussion of this new idea in education, see page 7.



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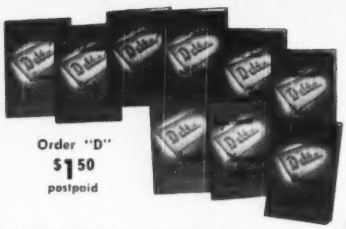

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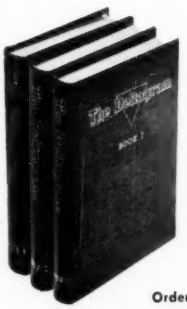

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In the Offing . . .

The March SCHOOL SHOP will bring you some interesting project material as well as the latest news about happenings in industrial education. As you will note from our back-page feature, From Washington, our editorials often stir things up. There will be more of the same next month. Your special April issue is shaping up. We know it is going to be the best yet and we think you will share our opinion when you see it.

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School Shop

FOR INDUSTRIAL EDUCATION TEACHERS

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School Shop TALK

COMMENTS ON ISSUES FACING INDUSTRIAL EDUCATION

The AVA and Industrial Arts

The 1949 Convention of the AVA has come and gone, and, as those who attended look back, it is believed they will classify it as one of the high points in the history of the organization.

With it have come certain features that serve as evidence that progress is being made. In the first place, the field of industrial arts has been recognized as an important phase of the activities of the Association. For the first time, there is a president whose primary interest is in a type of education that, while it is not vocational in its objectives, has a profound effect on the young people who may later enter the occupations represented in the AVA.

This achievement carries with it certain responsibilities that those engaged in the field of industrial arts cannot afford to ignore. Having shown willingness to recognize the importance of this phase of school work, those responsible for this action have a right to expect that industrial-arts teachers and supervisors will actively support the AVA by becoming members, and thus add their strength to an organization that is already a vital force in the educational affairs of the nation. The new president needs support, and his administration will be successful only to the extent to which he receives it.

Another feature introduced this year has been the establishment of an Advisory Council. This Council is made up of representatives from the various groups within the organizations, including industrial arts. The purpose of the Council is to provide a medium through which the Executive Committee may receive suggestions and recommendations which the members believe will lead to more effective service on the part of the organization as a whole. Through this agency the representatives from the area of industrial arts have an opportunity to convey to the administrative officers the feelings and attitudes of their group toward the policies of the organization that affect their work. It is hoped that the industrial-arts people will weigh these policies carefully and avail themselves of this opportunity to participate in the administration of the organization to the end that it may improve its service to all.

Thus we see that, from the point of view of the specialists in industrial arts, the AVA has at last awakened to the importance of the field of education they represent. If further progress is to be made, all of us must work, together, with the purpose in mind that what has been gained shall not be lost.—*T.D.*

Youth Want Help

The other day we came across a report of a recent survey of how the American high school is serving today's youth. The investigators decided that one way to attempt to find an answer to the problem is to ask the youngsters themselves. So they proceeded to pick out high schools in five different states and ask the students in each to reply to the question, "The five most important things I expect the high school to do for me?"

Topping the list was vocational exploration and training.

The second question was, "The high school is helping me most in these five ways." On this item, human relations was the topic given the most votes, although vocational exploration and training ran second.

In answer to the question, "The high school is helping me the least in these five ways," the high-school students graded subject matter as their greatest problem (apparently they did not like to wrestle with academic subjects) while vocational training was the second least helpful.

It is very evident from the statements of these high-school students that while a fairly large percentage find vocational work in the school satisfactory from the standpoint of meeting their needs, there still is a large minority which believes that the high school is remiss in not offering work which has vocational implications for them.

It is up to the people in our field, apparently, to carry the ball, and it is heartening, to say the least, to have the students and some experts, at least, aware that the vocational program needs greater attention in the modern secondary-school curriculum. — *L.W.P.*

A Word to the Wise

Every so often we receive a manuscript that has been submitted simultaneously to other editors. This is embarrassing to all, as editors do not wish to repeat material. One at a time, please!—*L.W.P.*

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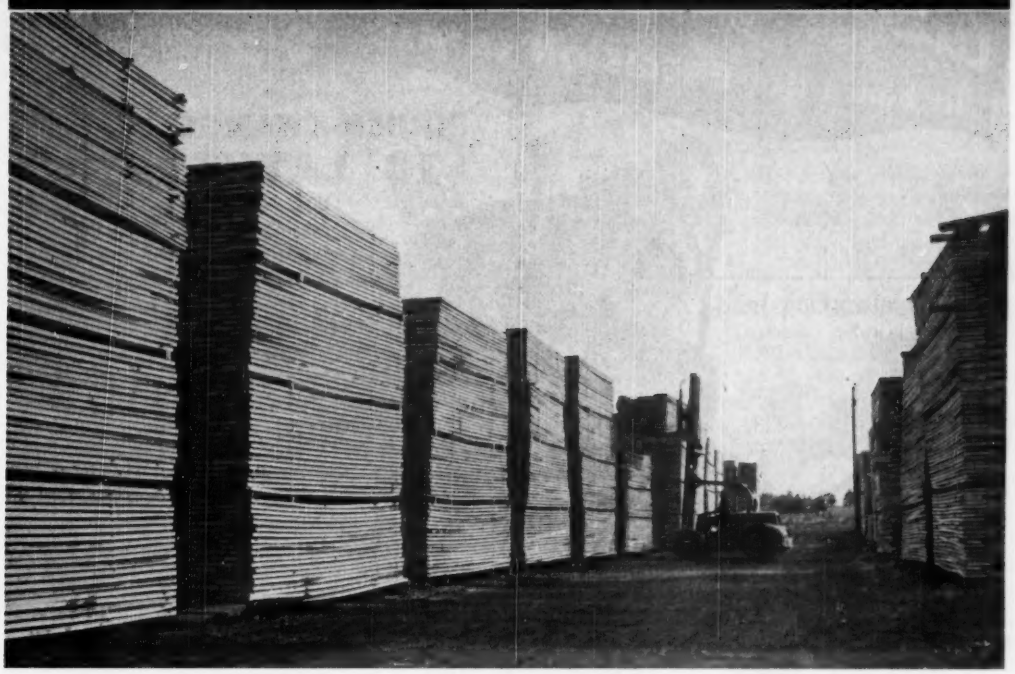

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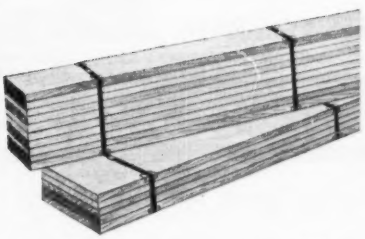

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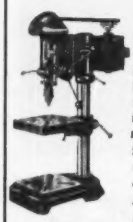

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What's Your P. Q.?*

Give yourself this test of teaching effectiveness and professional alertness which has been devised by a member of the faculty of The Stout Institute, Menomonie, Wis.

By Stuart Anderson

HOW do you stand professionally? One of the important characteristics of the good teacher is that he takes stock once in awhile and appraises himself.

No one ever achieves perfection, but the good teacher makes an honest effort to move forward professionally. The status of the shop teacher in the total educational program has improved tremendously in recent years. Constant effort is needed, however, to maintain that position.

The following check list was designed to help the industrial-arts teacher objectively to determine his professional status. While neither completeness nor infallibility is claimed, it is hoped that this selfevaluation device will have guidance value to shop teachers who have a genuine interest in this business of teaching school. Check each item to which you honestly believe you can answer "yes."

As a Director of Learners

____ 1. Do you have a working knowledge of the subject you are teaching?
____ 2. Do you understand the students in your classes?
____ 3. Do you enjoy working with and for others?
____ 4. Are you capable of performing the operations required of students in your classes?
____ 5. Are you interested in the subject you teach?
____ 6. Are you genuinely interested in boys and girls?
____ 7. Do you use text or reference books in your classes?
____ 8. Do you have a course of study for your courses?
____ 9. Do you give objective-type tests?
____10. Do you provide opportunities for pupil-teacher planning?
____11. Do you use audio-visual aids (i.e. black board, bulletin board, models, motion pictures, slides, etc.)?
____12. Are you responsible for the supervision of a homeroom?
____13. Are you in charge of an extra-curricular activity?
____14. Have you worked with a curriculum committee in the last five years?
____15. Do you keep abreast of technical developments in your field of teaching?
____16. Do you periodically visit industrial plants in the vicinity?
____17. Have you had paid trade or work experience in industry, or related fields, in the last five years?
____18. Do you have an understanding of the problems of employer-employee relations in an industrial society?
____19. Do you teach shop safety?
____20. Are principles of good design incorporated in your projects?
____21. Are the tools and equipment in your shop in satisfactory working condition?
____22. Have you introduced any new projects for students this year?
____23. Are you enthusiastic about your job?

The Professional Pulse

____24. Are you certified (qualified) to teach industrial arts in your state?
____25. Are you a college graduate?
____26. Do you have a master's degree?
____27. Have you taken graduate work beyond the master's degree?
____28. Have you taken summer school, extension, or evening school professional courses in the last five years?
____29. Have you had an article published in an educational journal in the last five years?
____30. Do you belong to a national teachers' organization?
____31. Do you hold membership in a state educational association?
____32. Do you belong to a subject-matter organization in your field of work?
____33. Did you attend a meeting of one of these organizations?
____34. Have you ever held an office in one of these teacher organizations?
____35. Have you ever been on the program of one of these organizations?
____36. Do you subscribe to one or more professional journals?
____37. Did you purchase one or more professional books in the last year?
____38. Do you subscribe to one or more daily newspapers?
____39. Have you written a textbook or other educational bulletin, pamphlet, or brochure?

Let's Get Personal

____40. Are you well groomed (face clean shaven, shoes polished and in good condition, shirt clean, etc.)?
____41. Do you wear a clean smock or shop apron while teaching?
____42. Is your language in the classroom grammatically correct and in good taste?
____43. Do you express yourself clearly and forcefully?
____44. Are you in good physical health?
____45. Are you an optimist? (Do you usually look on the bright side of things?)
____46. Do you have a hobby?

In the Community

____47. Do you belong to a local civic or fraternal organization?
____48. Are you a registered voter in the community?
____49. Did you vote in the last presidential election?
____50. Have you attended a meeting of the city council, county board, or state legislature in the last two years?

In Summary

Because teaching is not static, the industrial-arts teacher should accept personal responsibility for his continued professional growth. While it is generally recognized that teachers represent a wide range in potential ability, the initial task becomes one of selfanalysis—of selfevaluation. After an inventory of needs has been made, the second step is that of attempting to improve one's status. The competent professional worker will recognize his potential, identify his accomplishments and limitations, and make a sincere effort to grow on the job.

Directions for Scoring Check List

Total the checks (√) you have made and multiply by two. Then rate yourself according to the following scale:

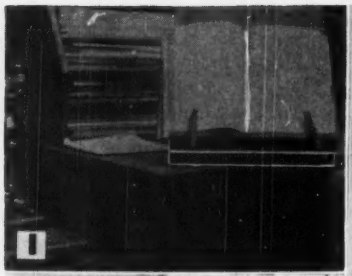
70—Passing
80—Good
90—Excellent

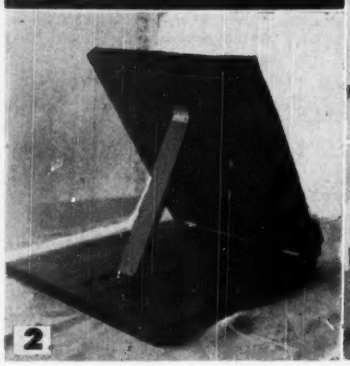
*Professional Quotient.

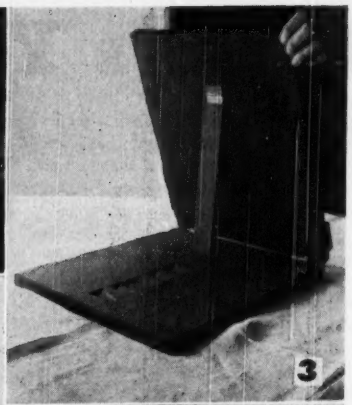
Holder Makes Good Project for Typists

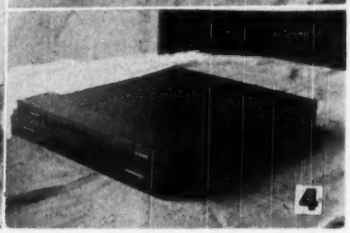
By Percy L. Brownell

Persons who use the typewriter will appreciate the utility of this easily-made copyholder. It calls for skill in woodworking and will repay the student with many years of service. Percy L. Brownell is in the Drafting Department at South High School, Omaha, Nebraska.









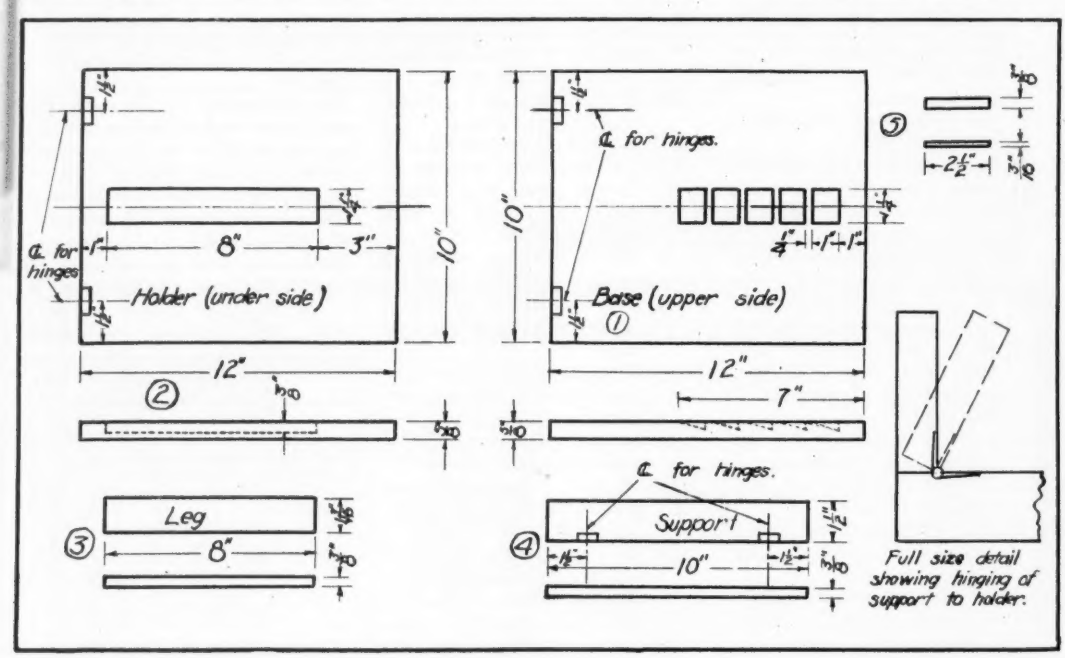
1. The copyholder in place ready for use.
2. Angle of holder is controlled by notches on base.
3. The leg drops into place when holder is raised.
4. Folded flat, the copyholder is inconspicuous.

IN typing, both hands are needed to operate the machine. That calls for a copy holder. To be most useful, it must be adjustable in order to hold the work at the proper angle for both vision and light. If one is copying from a book, the holder must keep the pages from turning by themselves. It should also be possible to fold it flat so that it will not occupy any more space than necessary when not in use. The copy holder pictured is valuable as a useful tool for the typist and it has much to recommend it as a woodworking shop project.

Two boards, preferably of black walnut, hinged together, will do for for the bed and holder. To keep the foot of the leg from slipping, the base can be notched in several places to give a variety of angles. The leg can be fastened to the under side of the holder with a hinge. That will necessitate cutting out a recess in which the leg can rest when folded flat. We now have planned the copyholder so that it will stand up in position by itself, can be folded flat, and still be self-contained so that there are no loose parts to be lost.

To hold copy on a slanting surface,

(*Continued on page* 24)



Should We Teach

A New Kind of Drafting?

asks Herbert E. Welch

Drafting instruction is in a rut and not realistic in terms of students' needs says the author who is a member of the faculty of Stockton, Calif., Junior College and teaches in the summer session at Oregon State College. The new approach suggested here has the enthusiastic endorsement of Professor George B. Cox, head of industrial education at the latter institution.

MANY of us who teach mechanical drawing have often questioned the value of the standard mechanical drawing course to the average high-school boy. Many have felt that another type of training was needed. Yet few of us have had any concrete idea as to just what this course should be. I would like to share with you the thinking, conclusions, and attempts of a group of active teachers who have been working on this problem and to describe briefly their attempt at a solution.

I have hesitated to raise this controversial question until teachers as a group were in some degree receptive to this idea. Before the war, most drawing teachers felt that all was well with the world and that the old-line type of mechanical drawing was satisfactory. The few who felt otherwise were in the minority and had little to say. Since the war there has been a swing in interest and a tendency to view education more objectively. There is a willingness to try the new and to demand that the old justify itself.

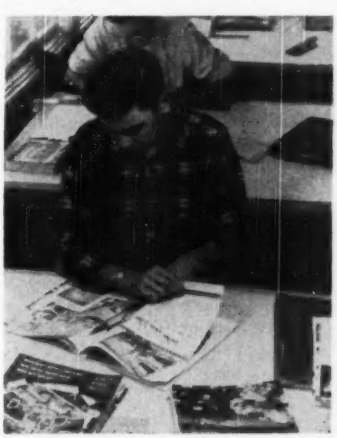
What Is Wrong?

But what is wrong with the standard mechanical drawing course? A subject that has been taught as long as has mechanical drawing must be satisfactory. But why is this unsound reasoning? For one reason there are relatively few teachers who do more than teach standard material. Most of us, when we set up a course, simply make a survey to find what is being taught. We then write our courses to conform with the majority. Too few of us do a careful job of analyzing the need in our school and then try to design our course to fit that need.

Conformity is, in many ways, a necessary procedure. A student who moves to another town or who moves to a school in another part of town should expect to be able to complete the course in another school. Another reason is that few teachers are original. They simply teach the subject the way they learned it. A third reason is that with few exceptions, all mechanical drawing books and problem sets follow a standard pattern.

Professor E. C. Willey, for many years the head of Engineering Drafting at Oregon State College, reports that at meetings of the S. P. E. E. he has seen tables piled with drafting books on display by the different technical book publishers. After examining these books it was his opinion that the differences in them was slight. They are all written around the same basic pattern, that set by Thomas E. French in his classic *Engineering Drawing* text and the pattern laid down in *Mechanical Drawing* by French and Svensen. Few will quarrel with the value of the many other texts written in competition with these two texts. But all must recognize that these texts are written for superior students who were college material. Most of them are too difficult for the mill run of students, for "the other 85 percent."

During the last few years there have appeared a number of texts showing an attempt to break away from the pattern set by French and by French and Svensen and which try to fit the needs of "the other 85 percent" of the students who make up our classes. I am told by representatives of the different textbook companies that few of them have enjoyed the huge sales of these two leaders.



Scrapbook preparation on subjects significant to the learner is as important as technics.

Not Ready to Move

Far too few principals or teachers are ready to move far from the standard text or the standard form of course. Change in education comes very slowly. But there are among the group of those who teach mechanical drawing many who feel that the standard course was at least a poor education for the majority of the boys and girls who took the course while in high school.

Since by far the largest number of students who take mechanical drawing are centered in cities it may not be remiss to recall a personal experience as an illustration of the problem of the other 85 percent. It was my privilege to spend 11 years in teaching drafting at the Union High School at Richmond, California. Richmond, before the war, was a manufacturing town of about 50,000 population. The huge Standard Oil Refinery, the Standard Sanitary Company, the Pullman Company, the Rheem Mfg. Company, and the Ford assembly plant were a few of the larger employers of labor. Many of their employees were of South European descent. Children from these families had grown up with parents who had but little educational background.

We had there an excellent vocational training program and a well balanced industrial-arts program. Our vocational machine shops, under the able direction of Martin Salmi, turned out many well trained machinists. Vocational as well as industrial arts, pattern work, wood work, printing, and drafting were also taught. We had about 250 boys a day in the mechanical drawing classes. The largest group was in the one year of general drafting. These boys wanted drafting as an activity subject. Drafting was required for engineering or for art. We had the usual group of lost souls whom we tried to save via the drawing board. Smaller groups took mechanical drawing as a shop requirement or took up drafting as a vocation. We offered a year of advanced drafting.

Drawing principles and practices can be taught with the needs of the consumer uppermost in mind.

Few Use Skills

During these 11 years we had contact with several thousand students, enough to know that the number who followed drafting either as a profession or who used it *directly* in some trade was extremely small. *Few ever made use of the skills,* either instrumental or lettering, that we spent so much time in developing. Few, even of the group of trade students, would ever sit down to actually make accurate scaled drawings.

But all of this group of thousands of students who were trained in mechanical drawing and more thousands in our school who were not would have use for a reading knowledge of the information contained in the drawing courses all of the rest of their lives.

All of them would read newspapers and examine maps showing roads, war theaters, location of new bridges, or they would try to read charts showing the cost of living, taxes, or study diagrams of proposed new tunnels, the areas covered by new radio stations, the plans for a new memorial auditorium, plans of new buildings. Many of them would some day plan a new home or build an addition to an existing home. They would read magazine articles illustrated with phantom and cut-away views and diagrams.

There is a large reading public for the many popular mechanics and science magazines. Wide use is made in them of different kinds of drawings. They contain many constructional articles. Numerous drawings are used in instruction pamphlets which come with new electrical and other household appliances. Purchasers of such equipment can read the drawings more intelligently if they have some knowledge of the meaning of lines, if they have some acquaintance with the idea of projection, if they understand the principle of sectioning, or if they can read a graph. All of this is consumer education.

The careful skills we taught them, the line work, the measuring, the hours of practice in lettering, are a most inefficient way to learn to read a drawing. If that method was efficient, we should teach the art of printing in the grammar grades when reading is first taught. Perhaps this is the basis for the dissatisfaction increasingly expressed with our present drawing courses. Are we aiming toward the proper objective? Are we training unwilling draftsmen when we should be teaching a consumers' course in blueprint understanding?

Efficient teaching requires that information be imparted quickly and in a thorough manner without waste effort. Drafting skill is unnecessary to read and understand a drawing. While it is true that the student who learns how to make a drawing also learns how to read it, yet can he afford to spend the many hours required to learn instrumental and lettering skills when he can learn in a relatively few hours how to read a complex drawing? He would need long and intensive training to be able to produce the same drawing. While he is acquiring one of the many drawing skills, he could better be learning to read and to understand a hundred varied drawings.

Countless Wasted Hours

I have felt for years that I was wasting countless valuable hours in teaching skills to mechanical drawing students. Our students make only a few dozen drawings. We are limited to a restricted learning area because of the available time, by the students' working speed, and by the comprehension maturity of the students. Few teachers have the facilities to give their students a comprehensive picture of the whole constructional process, from the idea in the designer's mind, through the designing and drafting process, to the pattern shop, to the foundry, the machine shop, and finally to the consumer. Most courses are limited to a small sampling of drawings selected because they are relatively easy to make and because they teach certain drafting skills or informations.

We have only been able to show them a small segment of the drafting process. We show them nothing of the knowledge needed by the designer, little or nothing of the steps in the manufacturing process, little or nothing of the needs of the workmen in the shop as he studies the drawing while making the machine or structure it shows, nothing of the blueprint or other duplicating process. True, a few schools cover this process well but their number is very small when we think of the schools of America as a whole. Many schools touch on some of the steps in this process but few cover it well. As a whole our results are a far cry from the widespread knowledge of the process of design and construction as it is known in business and industry.

I have long felt that we were missing a fine educational opportunity in continuing to teach this narrow type of drafting to the large group now taking it. To a few who appear to need this specialized training, our present work is reasonably satisfactory. But for the larger group we need a radically different type of training in the drafting field. They need a reader's or a consumer's knowledge of drafting, its purpose in conveying exact information, the means it uses to convey this information, and its place in the constructional process.

Meanings Should Be Learned

This new type of training should teach the meaning of the unusual system of delineation used by the draftsman and engineer and the reason for it. It should teach the meaning of sectioning, as well as its purpose and its practices. It should explain the way graphs are set up and how to read them. It should give an understanding of sheetmetal layouts and patterns. It should allow the student to gain an over-all picture of the constructional process from the idea to the completed product or structure. The student should, as the result of this training, acquire the ability to use and to understand the *average* type of drawing he will meet in later life as a business man or as a consumer. The girl should have a general understanding of the information and meaning of the different parts of a house plan.

While talking recently with a friend who operates a sizeable planing mill, I asked him how many of his workmen made drawings. He thought that some of them could make a drawing but that in their daily work few did. They spent their time feeding lumber into machines, saws, planer, stickers, in making counters, window frames, window sash, kitchen cabinets, and a host of similar things. They had no time to draw. But, while I was talking to him, several workmen came up to us with problems which they showed him by means of sketches made on pieces of scrap lumber and he explained the solution or gave his directions on the same piece of lumber or on the back of an envelope.

He, as owner and manager of the mill, did some layout drafting but generally found his time to be so valuable for other purposes that he hired a young draftsman to do the drawing for him. He explained, "Most of the men I know have their drawings made instead of trying to draw them themselves." This idea was verified in conversation with many other business acquaintances. In every case the owners and the workmen needed to know how to read the drawings and how to make quick sketches but in very few cases did the actual drafting skill seem valuable to them.

The standard blueprint reading course at once comes to mind. There are many excellent texts and workbooks on the market for blueprint reading. The majority of them, however, are distinctly vocational. Each trains in blueprint reading for some special field, for use by machinists, sheetmetal workers, for the building trades, or for similar specific trades or occupations. Few are broad in make-up or are written with general education objectives in mind.

Consumer Values Important

It seems logical that the high school, the junior-high school, and to a lesser degree the junior college, should offer drafting courses which would present the graphic language from a broad overview concept as a users' or as a consumers' course. In such a course, skill would be a very secondary outcome. It would be replaced by broad experience with many kinds of drawings selected from many fields. It would aim at acquaintance with drawing principles and practices, all centered around the needs of the consumer.

Contacts with teachers in summer classes, correspondence with teachers working on the same line, discussions with teachers who have taught trial courses, convince me that such a course fills a long-felt need and points the way to a new concept in the teaching of mechanical drawing.

Out of these many contacts and discussions has jelled a fascinating new approach to the teaching of drafting. There is little in the course that is new —most of the methods have been used before and are well tested in the classroom—but the outline, the approach, and the method seem new. It is rather, let us say, a new assembly of tried ideas and methods. We see the possibilities of presenting the material in this new type of drawing class by several methods. The activity method is described here.

Briefly described it is an activity course making wide use of teaching aids and taught in a learning laboratory instead of the conventional classroom. (The physical classroom can be used as a learning laboratory as can the ordinary drafting room.)

A New Approach

According to present thinking it seems convenient to handle this course in three main time divisions or sections.

Section 1. (About 15 percent of his course.) This time is occupied in a short, intensive instruction in basic drafting principles and information. Here the student may develop some skills.

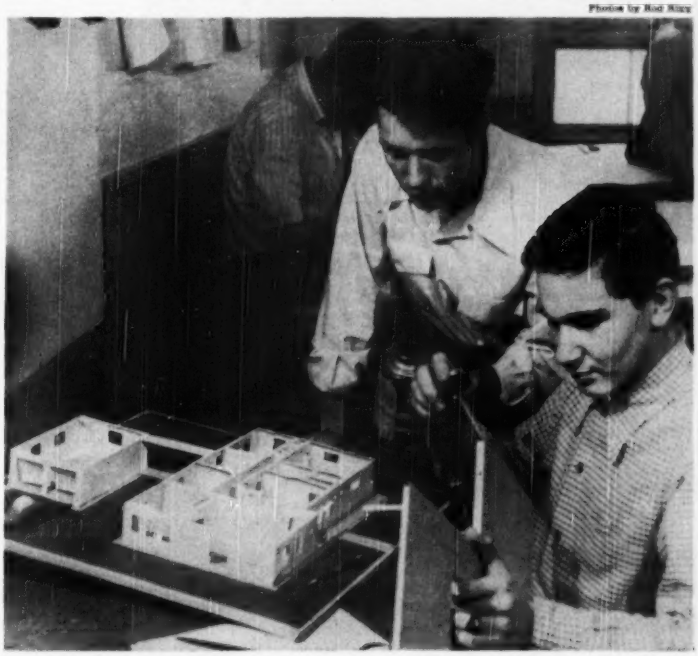
Section 2. (About 20 percent of his course.) The student spends this time in receiving an overview of the several principal fields where drafting is used. He handles many blueprints, carefully selected to show a cross section of their use in engineering, architecture, home building, general construction. These fields are broken down into logical divisions.

He views films and slides and does much browsing through trade magazines. He makes sketches and tracings. He fills out workguides to collect and to interpret the information he gets from the films, the magazines, and the blueprints as well as from field trips and interviews.

Section 3. (About 65 percent of his course.) The major part of his time in this section is spent in the learning laboratory, intensively working in one of the fields he found most interesting from his overview in the second section. He now goes as deeply as possible into

Models can be built by students of the actual object shown in drawings they are studying.

Photos by Rod Nixx



the use of drawings in the chosen field. He works from drawings to build model houses if he has chosen architecture; he makes a "tin" bridge if he has chosen structural steel; or he makes a roof truss, he makes paper patterns, sketches, draws graphs, and so on.

During all of this time he is constantly at work on blueprints, collecting and using information from them, and learning to interpret it.

In the learning laboratory, facilities are provided for reading, for the preparation of scrapbooks, for the use of drafting tables and equipment, for viewing slide films, slides, sound-motion pictures, for the making and use of teaching models, for handling samples of objects shown in the blueprints. There are facilities for soap carving and for working with clay or plasticene while studying projection principles. When studying working drawings, a group of business files supply a wide assortment of both simple and complex blueprints. These blueprints are filed under a well organized filing system.

Students Make Models and Prints

The student may take his drawing to a workbench and build from it an actual model of the thing shown in the drawing or he can make a simplified version, if it is too complicated. When he is studying sheetmetal layout he can make models from paper fastened with airplane cement instead of solder. Again, he may trace parts from the blueprints. He may learn duplication by making blueprints and any of the various direct prints from his tracings by using a sun frame or by making a simple printing machine.

An outstanding project made as the result of this kind of drafting training was a model of a steel bridge made of tin salvaged from gallon tomato cans. This boy became engrossed in the project and went to much extra time and effort outside of class. He did a great deal of research and tested many materials before deciding to make his model out of tin. He had his metal cut in narrow strips. Then he built at home a brake to bend the strips into small models of the angles used on the bridge. He, quite ingeniously, began soldering strips of tin together to make lattice girders and built up beams until he had a beautiful bridge model. His model was astonishingly strong and beautifully accurate in detail.

At the end of such a course he had not only learned many useable things about drafting but he had also found a practical means of getting first-hand information about the field in which he may later wish to be trained and where he may eventually seek employment.

We have found an unexpected but valuable by-product from this training. The students have acquired information highly useful to them in selecting a vocation. One surprising result of this course is that the student will often decide, after he has become better acquainted with a field which he has decided to follow, that it has many requirements and features which are distasteful to him. So he decides then to try another field, generally making a much more intelligent choice the second time.

In summary, it may be that we can find our way to a better type of training in the drafting field than we now offer to the mill run of students. But we must pull our head out of the sands of skills training and of few projects and work toward breadth of information and experience and toward the development of a new body of teaching methods and learning projects in this fascinating field of work.

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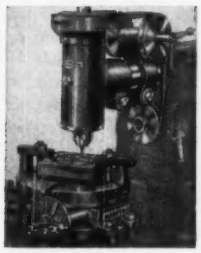
Memo

This is just a reminder that something special is coming your way in April from SCHOOL SHOP. We're all busy putting together what we sincerely believe will be the best special April number yet. There will be a lot of material in it which you will be able to make use of in planning your shop purchases for 1950-51 and the years beyond. Watch for the April issue!

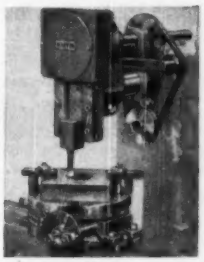
NOW AVAILABLE FOR SCHOOLS
MARVIN *Machine Tool Attachments*



MARVIN VERTICAL MILL ATTACHMENT. No. V-1200, a Head combining simplicity and high performance with low cost. This Marvin *Head can be set at angles*, pulled out far past the travel of the table for large overhanging work. Extremely simple to attach. Has a heavy spindle equipped with Timken tapered roller bearings which assures smooth operation at high speeds. Spindle nose takes end mills with 3/8" straight shank, up to 1/2" diameter cutter. Unit is machined to slip over 1 1/2" overarm. Easily adapted to other size overarms. No extra motor needed—height 7 1/2". Price $65.00.

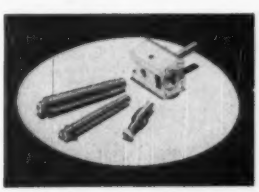
MARVIN ROTARY INDEX TABLE. No. 7-1102. A strong rigid precision table at a moderate price.

The 6" table is graduated in degrees and has "T" slots for 3/8" bolts, with a bushing in the center. Table locks from the bottom. It cannot tilt. Cast iron worm wheel, hardened and ground worm (40:1 ratio). Worm can be disengaged. 3 index plates with 6 sets of holes each give a wide range of divisions. Hand wheel also furnished, graduated in 1/2 degrees. Height 2 5/8" . . . which gives ample working space. Price $93.00.



MARVIN SLOTTING ATTACHMENT. No. S-1070. The Marvin Slotter can be quickly mounted. *It can be set at angles to get draft on dies*, etc. Can be pulled out past the travel of the table to handle large overhanging work. The stroke is adjustable from 0" to 2". Holder takes tools having 1/2" shank, machined to fit 1 1/2" overarm by using a bushing or turning down a special overarm. Height is 7 1/2", width 4 1/2". Machines dies, squared or splined holes, internal gears, etc. Price $82.00.

MARVIN DIVIDING HEAD. No. B-1400. The Marvin Dividing Head provides wide latitude in selecting various divisions to meet specific requirements. The Marvin Head is ideal for dividing operations required in gear cutting, lay out, splines, fluting taps or reamers, cams, hex screws or squaring shafts. Unit comes complete with 3 index plates, each having 6 sets of holes. It will tilt 5° below horizontal axis to 30° past vertical axis—total 125°—weight 15 lbs. Head is mounted on 2 heavy trunnions. Tail stock has 2 pins—ratio 4:1. Tail center travel 1/2". Vertically adjustable for tapered work, spindle nose No. 2 Morse Taper Socket and 1"-10 threads. Price $99.50.



THE NEW MARVIN MICROMETER BORING HEAD NO. M-1000T. A versatile precision tool of the highest quality, small in size, low in cost. Designed for use on Milling Machines, Drill Presses, Boring Machines or Lathes.

SPECIFICATIONS: Cast iron body 2 1/8" x 1 3/4" • Close fitting slide, adjusting screw to snug up slide or lock it • Slide has 3/8" travel • Dial graduates 1/1000" • Hex socket for adjustment. (Comes complete with the following equipment): 1-7/16" x 3" boring bar • 1 solid tool bit • 1 No. 2 Morse taper shank • 1 3/8" straight shank • 3 wrenches. Priced at $18.00.

MARVIN equipped mills cover the widest possible field of operations (within the capacity of the mill). MARVIN units allow more students, more practical instruction for less investment and less square feet of floor space per machine. MARVIN rugged designing and precision engineering are reflected in the high quality work your students will produce. *Write today for full information.*

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Adjustable Boring Bar

By Clyde B. Healton

Alhambra City High School
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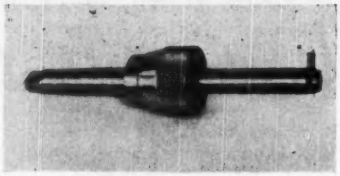
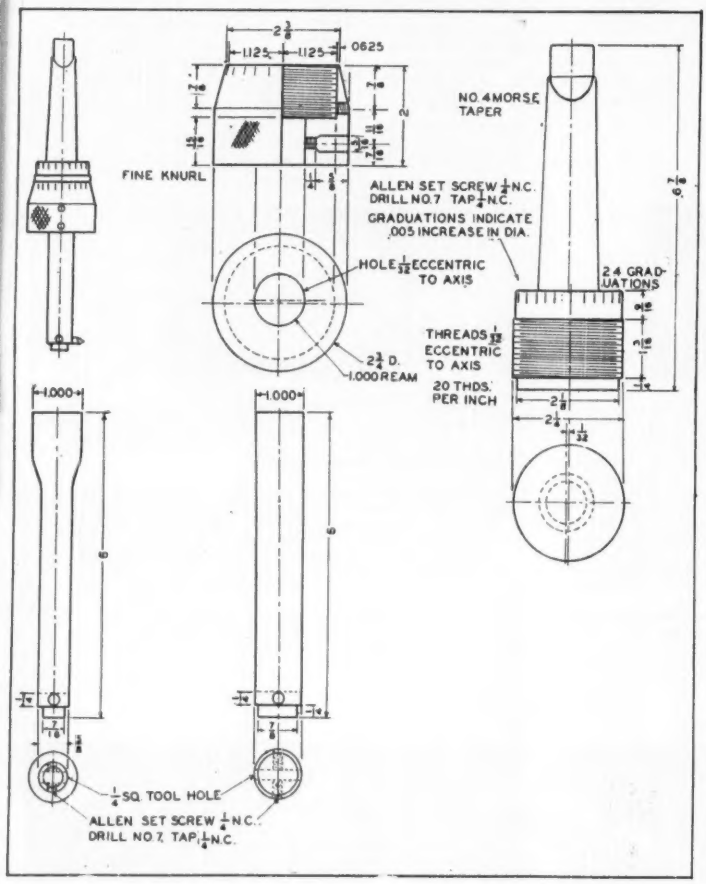


ONE of the machine tools commonly found in most high-school machine shops is the heavy-duty drill press. This machine is a necessary tool, but one that is difficult to keep busy. Machine shop is generally a popular subject and usually there are more students than machines. These two problems have been partially overcome here by equipping the drill with an adjustable boring bar so that a greater variety of work can be done on it.

The cost of an adjustable bar is prohibitive for many shops and is a tool that is difficult to make with limited equipment. This problem was solved by machining our own bar using a double eccentric principle for adjustment. In the zero position, the axis of the two eccentrics are together. As the graduated nut is rotated, the eccentrics move away from each other and give an increased radius to the tool.

The axis of the first eccentric is offset 1/32" from the axis of the taper shank. The boring-bar socket in the graduated nut is offset 1/32" from the axis of the thread in the nut. This adjustment provides an increase in radius of 1/16" or 1/8" increase in diameter. If the graduated nut is rotated back to zero and the boring tool is moved out 1/16", a larger hole can be bored. An Allen set screw locks the nut in position.

I have no more trouble providing work for the heavy-duty drill press.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ABOUT YOUR FELLOW TEACHERS

EINAR E. SIRO has been named professor of industrial education and head of the department at Chico State College, Chico, Calif. He recently completed his doctorate at the University of Minnesota where he also taught industrial education. . . . DWIGHT H. NICHOLS of Ohio State University has been appointed head of the department of industrial arts at San Francisco, Calif., State College. . . . HOWARD B. GUNDERSON, president of the Salt Lake Area Vocational School and former state director of trade and industrial education for Utah, has resigned to become supervisor of training for the Utah Copper Division of the Kennecott Copper Co. . . . ROBERT HUSSEY has been named assistant professor of industrial arts, Wilmington, Ohio, College, succeeding EDWARD J. KORNMAN who has resigned to continue his work on the doctorate at the University of Illinois. . . . WALTER C. BROWN, former Missouri state supervisor of industrial education, has joined the faculty of the University of Missouri as assistant professor of industrial education. . . . The new industrial-arts coordinator for the Los Angeles, Calif., County schools is DAVID O. TAXIS who was formerly at the Downey, Calif., Junior High School. . . . EARL R. MCATEE, director of the Brake School of the Barrett Equipment Co., St. Louis, Mo., has been named a vice-president of the company. . . . VINCENT DRESSER, Rumson, N. J., High School, has been named to the faculty of the industrial-arts department of the Trenton, N. J., State Teachers College. . . . NORMAN RISK has been named a member of the industrial-arts department at the Michigan State Normal College, Ypsilanti. . . . WALLACE D. JOHNSON is the new president of the Yates-American Machine Co., Beloit, Wis., having been promoted from the position of vice-president on the election of E. J. DALTON, former president, as chairman of the board. . . . DALE ROBERTS, former Illinois state supervisor of industrial arts, has been appointed director of industrial education at Mattoon, Ill. . . . CHARLES V. YOUMANS has been named to the faculty of industrial education at the University of Kentucky, Lexington. . . . WALLACE WITT is now at the Silver City, Panama, High School.

News

HAPPENINGS IN INDUSTRIAL EDUCATION

Iota Lambda Sigma Meets

THE Grand Chapter of Iota Lambda Sigma, professional fraternity in industrial education, held its annual meeting in connection with the AVA Convention on December 9 in Atlantic City. New national officers elected are as follows: president, Glenn Smith, Oklahoma A & M College, Stillwater; vice-president, George F. Henry, Colorado A & M College, Fort Collins. Reelected were George H. Resides, historian, Pennsylvania State College, State College; and Clyde H. Wilson, secretary, University of Tennessee, Knoxville.

Outgoing president Joseph R. Strobel, state director of vocational education for Ohio, reported that the organization now numbers 18 chapters and added 384 members during the past year. A new chapter was installed at Northwestern State College, Natchitoches, La. A directory of the over 3000 members will be published.

There were 99 members and guests at the annual dinner at Atlantic City and the honor guests included the majority of the leading figures in trade and industrial education.

New Group Formed

THE Northeastern Ohio Industrial Arts Association was formed at a recent meeting at Kent State University, Kent, Ohio, with over 150 industrial-arts teachers in attendance. A committee, aided by Professor Dewey Barich of Kent, presented an interesting program on wood finishing, led by representatives of various companies manufacturing paints and finishes, and a talk by Dr. S. L. Coover, head of the industrial-arts department at the California, Pa., State Teachers College, on "The New Look in Industrial-Arts Drawing."

Officers of the new association are: president, Robert B. Boyer, Cuyahoga Heights School, Cleveland; vice-president, J. H. Detrick, Parma High School; secretary, Max Lerner, Ashland High School; and treasurer, E. F. Myers, Ellet High School, Akron. The organization consists of industrial-arts teachers in the 16 counties in the northeastern part of the state.

Openings in the Philippines

THE Department of State and the Board of Foreign Scholarships announce grants to 14 American citizens to teach for one year (1950-51) in the Philippine School of Arts and Crafts in Manila and the National Agricultural School at Bukidnon on the Island of Mindanao. Grants, made under the Fulbright Act, include basic living allowance, supplementary maintenance allowance, and round-trip transportation, all in Philippine currency. Teachers are wanted for industrial arts, trade and industrial and agricultural education. Applicants should have a bachelors degree and graduate work, be approximately between 25-50 years of age, have three years of teaching experience and practical vocational experience. Application blanks may be secured from the Division of International Educational Relations, Office of Education, Washington 25, D. C.

New Shop Safety Service

THE National Safety Council recently announced a new service for shop teachers called the "School Shop Service Unit" which was developed at the request of a group of shop teachers who wanted a yearly minimum service. It can be expanded by ordering materials to suit the needs of each shop. The service is available at a cost of $7.00 a year. A copy of Service Guide 2.3 which lists and describes all school materials available from the Council can be secured without cost from Wayne P. Hughes,

PRINTING touches life at so many points! Into whatever vocation the boy or girl grows, a knowledge of printing is fundamental.

Besides, a graphic arts course often enables a student to discover and give direction to his natural talents. This may lead him into the printing industry itself, which includes four out of the ten highest paid crafts. Or it may inspire him to seek self expression in fields where familiarity with and appreciation of the principles of printing are invaluable assets.

ATF, with its long-established and richly-experienced Department of Education, is ready at all times to consult with school officials on printing departments and their important place in today's curricula.

AMERICAN TYPE FOUNDERS

Department of Education

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Director, School and College Division, National Safety Council, 20 North Wacker Drive, Chicago 6, Ill.

Massachusetts Group Meets

THE Massachusetts Industrial Education Society held its 53rd annual meeting on January 21 at the Hotel Sheraton, Boston. Dr. John R. Ludington, specialist in industrial arts, U. S. Office of Education, Washington, D. C., spoke to this group which is the oldest society of shop teachers in the United States.

Technical Institute Award

AN award in the form of annual prize of $500 in cash and an appropriately engraved certificate will be given by the McGraw-Hill Book Co. and entitled the James H. McGraw Award in Technical Institute Education in memory of the founder of the firm. A committee has been formed to consider contributions which will usually lie within the three categories of teaching, publication, or administration. Nomination forms may be secured from A. B. Bronwell, Northwestern University, Evanston, Ill., who is secretary of the American Society for Engineering Education. Nominations must be made by March 15. The presentation of the award will be made at the June meeting of the society at the University of Washington, Seattle.

Convention Calendar

OHIO INDUSTRIAL ARTS ASSOCIATION, February 23-25, Columbus.

CALIFORNIA INDUSTRIAL EDUCATION ASSOCIATION, March 24-25.

CONNECTICUT INDUSTRIAL ARTS ASSOCIATION, March 24-25, New Britain.

ILLINOIS VOCATIONAL ASSOCIATION, March 30-April 1, Chicago.

NEW YORK STATE VOCATIONAL AND PRACTICAL ARTS ASSOCIATION, April 11-13, New York City.

MICHIGAN INDUSTRIAL EDUCATION SOCIETY, April 20-22, Grand Rapids.

SPRING CONFERENCE ON INDUSTRIAL EDUCATION, April 21-22, University of Missouri, Columbia.

INDIANA INDUSTRIAL EDUCATION ASSOCIATION, April 27-29, Turkey Run State Park.

TEXAS VOCATIONAL ASSOCIATION, May 5-6, Galveston.

AMERICAN INDUSTRIAL ARTS ASSOCIATION, May 11-13, Cincinnati, Ohio.

The New BOICE-CRANE

ALL-PURPOSE, COMBINATION

CONTOUR SAW AND BAND FILER

For Modern Short Cut Contour Machining by Band Saw!

Tools; metal templates; special wrenches and wrench templates; cams; spiral parts, irregular shape stacked parts; stamping, forming and trimming dies all produced in minutes instead of the hours required by old methods involving milling, shaping and hand filing.

Precision filing and file broaching to a layout finish line and flash removal in ONE-NINTH the time required by hand and ONE-FOURTH the time required by reciprocating filing machine. Eliminates guesswork in angle filing.

The only combination Contour Saw and Band Filer with any one of 8 speeds instantly available up to 4100 blade f.p.m. for efficiently cutting wood, sponge rubber, masonite, etc.—and ranging down from there to a slow 92 blade f.p.m. A speed for cutting every metal and material like bar and sheet steel; steel, brass and aluminum tubing; hard rubber, transite, cast iron, plastics, bronze, synthetic glass; sheet asbestos; bakelite, and tool steel up to 1" thick, and for filing a variety of metals and other industrial materials. Wheel speed chart, for cutting all these and more, mounted right on machine.

Permits all the modern, high speed techniques of inside, as well as outside, contour sawing.

Heavy, rigid 10-gauge solid welded steel frame.

Specially designed guides sharply reduce blade costs. Handle blades 3/16" to ¾" wide.

15"x15" heavy ribbed cast work table, ground to close machine tool limits and mounted on two heavy cast trunnions.

Enclosed textolite disc wheels balanced for speeds in excess of 4100 blade f.p.m.

File bands are available for all purposes, in two widths, two shapes and six cuts. The file segments have exclusive, patented, self-aligning ends which automatically lock to produce a continuous, rigid, flat surface.

Band Files in ¼", ⅜" and 1" widths, Flat and Oval, in a total of ten tooth styles to fit other make machines.

COMPACT • PORTABLE • ACCURATE
RUGGED • LOW COST

BOICE-CRANE INTERMEDIATE CAPACITY POWER TOOLS

- Designed for ready adaptability to a wide range of projects, fewer machines are needed to fill all your requirements.
- As nearly 100% safe as modern devices permit.
- Of just the right size for school shops—not too big, nor too small—they permit more efficient shop layouts.
- Durably constructed, they can take a beating which would incapacitate most machines.

BOICE-CRANE COMPANY
938 Central Avenue • Toledo 6, Ohio

Please send free literature on Boice-Crane's ☐ Contour Saw and Band Filer ☐ New 44-page catalog No. 50 on entire line.

Name .....
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IN THE Morning Mail . .

Brief comments about SCHOOL SHOP and the field it serves are invited. Address the Editor, SCHOOL SHOP, Ann Arbor, Michigan.

Gentlemen,

I enjoyed the paragraphs on page 2 of the January issue about "Industry Trained or College Trained?" very much. Professor Diamond's way of saying it ought to be in print perennially for the good of the cause.

H. W. Teichroew,
St. Paul, Minn., Vocational School.

Gentlemen,

It has occurred to me that we take SCHOOL SHOP pretty much for granted and accept it without considering the nature of the service which it renders to us. I believe most of the men in this state read your publication as I hear very frequent comments on it. One feature that I find particularly helpful is the more recent happenings in industrial education, particularly as they apply to legislation and what goes on in Washington.

I want to take this opportunity to tell you that we appreciate the service rendered by your magazine in this state, and that we find it a help. *Merton Wheeler,*
State Supervisor of Industrial Education, Jefferson City, Mo.

Gentlemen,

We look forward to receiving SCHOOL SHOP every month. It has been of inestimable value in our teacher-training courses . . . .

D. M. Burkheiser,
Head Industrial-Arts Dept.,
Nebraska State Teachers College, Chadron

WESTON
High-Frequency Analyzer

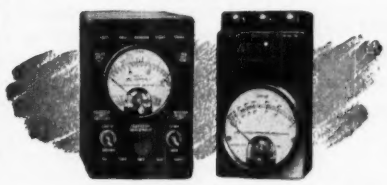
MODEL 769

Provides:

1. A stable, probe type, Vacuum Tube Voltmeter.
2. A high impedance electronic Volt-Ohmmeter using 115 volt, 60 cycle power.
3. A conventional Volt-Ohm-Milliammeter with self-contained power source.

Ideal for practically all electronic measurements up to 300 megacycles. Especially designed for AM, FM, and Television requirements. Completely independent of line voltage variations between 105 and 130 volts. Full details in bulletin R-31-B.

COMPACT TEST EQUIPMENT FOR CLASSROOM USE



Volt-Ohm-Milliammeter (Model 697)—Contains carefully selected group of ranges to cover a wide variety of electrical measurements. Compact, light weight, and low in cost.

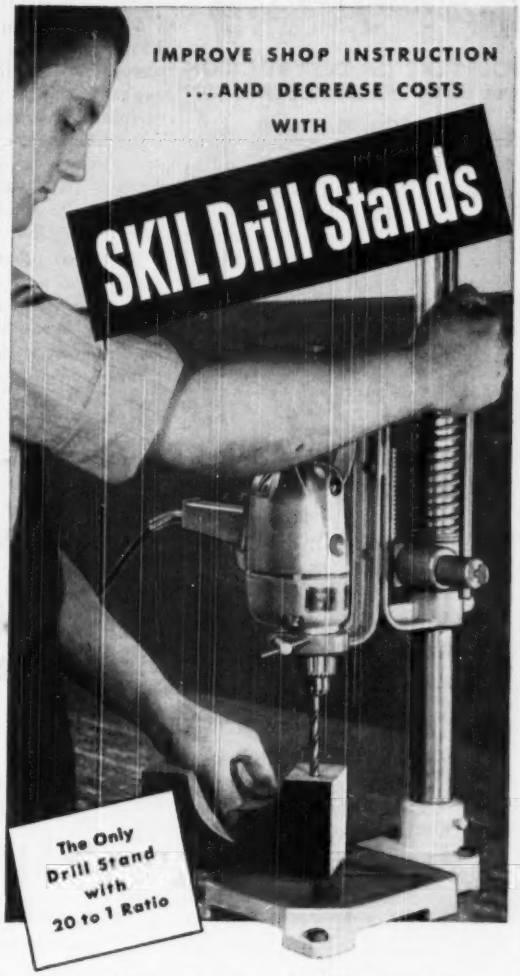
Ohmmeters (Model 689)—Available in two, double range instruments . . . 0-10 and 0-1000 ohms full scale; and 0-5000 and 50,000 ohms full scale. Compact, rugged and low in cost.

WESTON *Instruments*

Write for Bulletin No. E5A describing the full line of WESTON Test Equipment . . . Weston Electrical Instrument Corp., 670 Frelinghuysen Avenue, Newark 5, N. J.

IMPROVE SHOP INSTRUCTION
. . . AND DECREASE COSTS
WITH

SKIL Drill Stands



Now you can teach drill press techniques . . . *at portable drill costs* . . . with SKIL Drill Stand. It's a real break for your shop budget!

Combine SKIL Drill with SKIL Drill Stand and you're set for accurate, precision drilling and hole sawing. 20 to 1 leverage ratio makes SKIL Drill Stand ideal for even your youngest students. Base slots hold work firmly. Ground supporting column insures accuracy in any position.

Improve individual shop instruction. Ask your SKIL Tool Distributor to demonstrate SKIL Drill Stand *today!*

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SKIL Tools

SKIL Tools are made only by Skilsaw, Inc.

Teaching Tools

POINTERS ON INSTRUCTION and SHOP ADMINISTRATION

By John F. Nowak

Use the Blackboard INSTRUCTION can be enhanced by use of the shop's blackboard, no matter how small it is or what shape it takes. Too many shop teachers use the board for infrequent group instructions or class lessons or as a convenient place on which to write their names, the date, and the current attendance of the class. There are other valid uses for the board, of which I should like to note a few.

Daily Problem. Set up a system whereby students who suddenly find themselves with "time on their hands" can put it to good use. Plan to place on the board *before* the class session begins a problem which is to be solved during that meeting. Set aside a few minutes between clean-up time and dismissal in which to discuss and give the solution for the daily problem.

Teacher-Student Discussions. The teacher ordinarily circulates among his students during individual-instruction time. Discussions frequently arise at this time wherein it may be necessary for the teacher to review a calculation or make some suggestions for the guidance of the student in working on his project. More often than not such advice is given verbally. A better technic is to invite the student to step to the blackboard where the teacher has the benefit of a facility for sketching or calculating. Moreover, when the discussion is ended the student has the opportunity to record the teacher's suggestions. Still another advantage to the foregoing is that a discussion between teacher and student will frequently attract the attention of other students who may contribute to or profit from the discussion.

Blackboard Illustrating. A good technic at blackboard illustrating is important for a shop teacher to develop and practice. Some pointers are:

1. Lettering is preferable to writing on a blackboard for shopwork.
2. Use colored chalk for comparisons and to illustrate high points.
3. A suction cup, a piece of string, and a piece of chalk combine to form a handy circle maker.
4. Straight-line drawings can be more easily made by scribing a section of the blackboard into squares.
5. Make use of brown paper patterns. To prepare, make a large-size drawing on brown paper. Next, perforate along all lines to appear in the drawing, using a hand perforator. To use, place paper pattern on blackboard and pat over perforations with a well-chalked board eraser. Remove pattern and go over outline, using colored chalk.

TO HELP YOU IMPLANT FUNDAMENTALS OF MECHANICAL DRAFTING ...use this FREE WALL CHART

A constant reminder of the most commonly used mechanical drafting symbols and how to use them well.

★ Saves instructor's time
★ Big enough for group use
★ Yours with the compliments of EBERHARD FABER, makers of MICROTOMIC Van Dyke, the only drawing pencil with HI-DENSITY LEAD.

Actual size: 16½" x 27"

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TRADE MARKS REG. U. S. PAT. OFF.

Teachers! Mail Coupon Now!

EBERHARD FABER PENCIL CO., INC.
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37 Greenpoint Avenue, Brooklyn 22, N. Y.

Please send my FREE instruction wall chart No. C36, 'BASIC STANDARDS IN MECHANICAL DRAFTING'.

Name_____
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Questions and Answers

Q. Whose responsibility is it to check fire extinguishers permanently located in a shop? (P. P.)

A. Ordinarily this responsibility rests with the custodian-engineer. However, the shop teacher should examine the extinguishers in his shop periodically and note the refill date as of each inspection, recording such activity in his log.

Q. May a shop teacher discard old shop furniture? (H. B.)

A. Yes, with this single proviso—he may not discard any piece of shop furniture which appears on the shop inventory until permission to do so is received in writing from his immediate superior.

Question Box

As a complement to this department, readers are invited to send in questions which relate to methods of teaching shopwork. If a personal reply is desired, include a stamped, selfaddressed envelope. Send questions to:

John F. Nowak
Postoffice Box 869
Church Street Station
New York 8, N.Y.

Now every shop can have the advantages of BAND SAWING

The new WELLS Model 49A METAL CUTTING BAND SAW

No longer does any shop need be without the advantages of band sawing for metal cut-off work. The new Wells Model 49A fits the smallest shop's budget, yet it does a man-sized job in any plant. From its welded steel frame to its tubular steel base, the Wells Model 49A is a rugged shop tool that will give long, dependable service. Its portability is unequalled. Easy to operate without special training, the Model 49A can be used by anyone in the shop. Automatic shut-off at the end of the cut eliminates the need for the operator to stand by. The continuous cutting action, utilizing every tooth of the band saw blade, means more economical cutting too. Write for complete details, today.

DESIGN DETAILS

Capacity: Rectangular, 3½" x 6½"; Rounds, 3½" diameter.

Blade: Size—½" x .025" x 5'

Motor: 1/6 HP, Ball Bearing—foot mounting.

Speeds: Selective (belt change) 54, 100, 190 f.p.m.

Drive: "V" Belt.

Vise: Quick action.

Blade Guides: Stationary brackets with adjustable blade guides.

Wheels: Disc type idler and drive wheels, mounted on grease-sealed ball bearings.

Blade Tension: Incorporated in frame design.

Switch: Manual — automatic stop.

Height to top of Bed: 24"

Bed Area: 6½" x 24"

Floor Space: 16½" x 38"

Net Weight: Approx. 118 lbs.

Wells Cut Right

Wells

Products by Wells are Practical

METAL CUTTING BAND SAWS

WELLS MANUFACTURING CORPORATION
2600 SHOP AVE. • THREE RIVERS, MICH.

Teach your students better work...

WITH THIS NEW DOVETAIL ATTACHMENT!

BETTER WORK is practically automatic with this new Stanley Dovetail Attachment. A real craftsman's tool, it turns out beautifully finished cabinet drawers, boxes—anything that needs corner dovetails. Your students learn fast how to make quicker, cleaner, more accurate dovetail cuts, both front and side or back and side, in one simple operation.

Stanley Dovetail Attachments are made for use with all Stanley Routers, Nos. 10A, 10B and 28. The small size attachment handles boards up to 12"—the larger up to 16". Write today for full details and prices to Stanley Electric Tools, Educational Dept., 482 Myrtle St., New Britain, Conn.

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HARDWARE • HAND TOOLS • ELECTRIC TOOLS • STEEL STRAPPING

School Shop KINKS

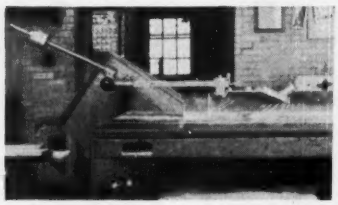
Payment will be made for each Kink published. Send to Editor, School Shop, Ann Arbor, Mich.

Add Catalog Uses

In my shops I have found the well-known mail-order catalog to be of immeasurable value. It is standard equipment in my shop libraries. Catalogs offer an ideal idea source for shop projects and their lists of standard sizes are a great help to students who have not developed the concept of standard sizes for furniture or household items. Catalogs from the mail-order houses will stimulate interest and aid consumer education because they enable the shop student to determine the spread between cost of production (according to his own experiences) and the retail selling price. —*John W. Joyce, Newport News, Virginia, High School.*

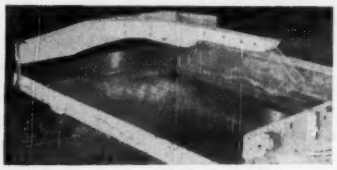
On Guards

(*1*) We decided to replace our worn out, wood-and-metal saw guard with a plastic one and thereby utilize our plastics craft knowledge and add a visual-safety factor to power-saw operation. Pieces were cut to fit our own machines and we used strap metal for the bracket,



holding it in place with stove bolts. The handle was from a discarded umbrella, drilled and tapped for a machine screw. Masking tape was left on the clear plastic until installation was completed.—*G. Harold Billingham, Weehawken, New Jersey, High School.*

(*2*) Our shop saw was large and powerful but the splitter guard and saw guard had to be unbolted and removed for more than half of our sawing operations. To ease my mind and meet legal requirements, this novel guard, made of wood, plastic, and iron, was devised. Removal is simple: we merely swing it off the table. Other advantages of the guard are that it permits a splitter guard to remain in place, even while rabbeting; the plastic shield permits easy observation of the blade while in operation; it can be made for almost any table top on almost any saw. As will be noted

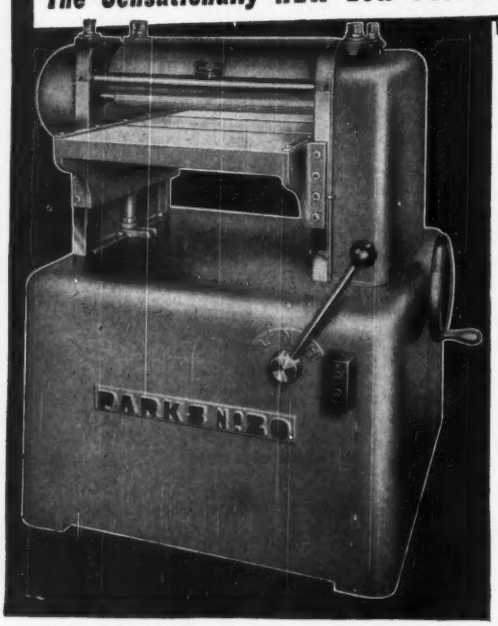


in the picture, construction of the guard is simple—it is put together with screws. —*Walter O. Hayes, Roosevelt High School, Des Moines, Iowa.*

India Ink Item

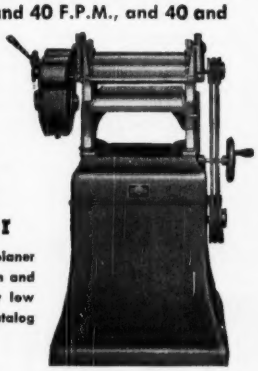
Who hasn't experienced the exasperation of trying to write some additional information on rough paper stock such as a magazine? You use ordinary india ink and it spreads. Result: a poor-looking job. I have found that this can be avoided by adding thick mucilage to black india ink. A further use for this technic is in drawing lines on mounting paper or eggshell board. The ink does not spread to the fine fibers when mucilage is added. —*Wallace I. Victoria, Queens, New York, Vocational High School.*

The Sensationally NEW Low-Priced



PARKS No. 20
20" PLANER

Here is a modernly designed, rugged, high-speed, low-priced planer that is ideally suited for every shop and industrial plant requiring a quality surfacer. The Parks No. 20 Planer has a four-knife cutterhead with a speed of 3600 R.P.M. and offers two feed speeds — 20 and 40 F.P.M., and 40 and 80 F.P.M. Write for complete descriptive literature.



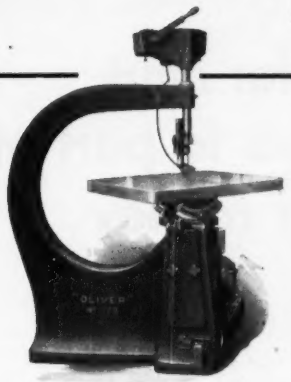
The PARKS Heavy-Duty 12" x 4" Planer

A compact, sturdy, thickness planer that offers mill planer precision and ruggedness at a sensationally low price. Write for descriptive catalog sheet.

The PARKS WOODWORKING MACHINE CO., Dept. 24-LL, 1546 Knowlton St., Cincinnati 23, O.

"OLIVER" No. 173-E JIG SAW

Accurately balanced
Smooth running

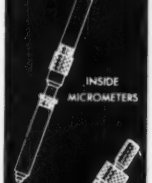


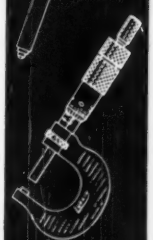
A "must" for the thorough training of tomorrow's craftsmen

Students soon learn to cut intricate scroll and fretwork on this full sized "Oliver" Jig Saw. There's 36½ inches between saw and column; the table is turned one-eighth way 'round to take stock of any length and practically any width. Exclusive saw tension device promotes finer work. Table tilts 30° to right and left of saw. Fully safeguarded. *Write for Bulletin No. 173-E.*

OLIVER MACHINERY CO., GRAND RAPIDS 2, MICH.

BETTER MEASURE WITH LUFKIN





IN SCHOOL—ON THE JOB

WITH LUFKIN *CHROME-CLAD "MIKES"* YOU CAN *SEE RIGHT—BE RIGHT!*

It pays to be able to see right—and be right . . . whether you're in the classroom, or out in the field. That's why it's smart to use any of the 3 types of *Lufkin "Mikes"* now with the *Chrome-Clad* visibility-plus finish. In blinding sun, or dim shop corner, the new *Lufkin Chrome-Clad* finish absorbs disturbing reflections. Markings stand out razor-sharp. And, the new *Lufkin Chrome-Clad* finish resists both rust and wear. Get "Better Measure With *Lufkin*"—specify *Lufkin* on your tool orders.

Write Dept. SS for your copy of the fascinating booklet, "The Amazing Story of Measurement." It's educational and entertaining. Enclose 10c (no stamps) to cover mailing and handling.

LUFKIN

TAPES • RULES • PRECISION TOOLS

LUFKIN RULE CO. • SAGINAW, MICHIGAN
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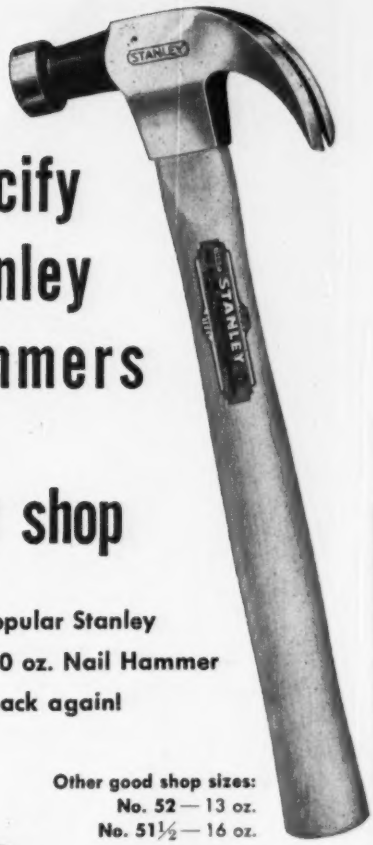
Specify Stanley Hammers for your shop



The popular Stanley No. 52½—10 oz. Nail Hammer is back again!

Other good shop sizes:
No. 52—13 oz.
No. 51½—16 oz.

Stanley Nail Hammers will stand hard usage in the hands of your shop students.

Drop-forged, special analysis steel heads are heat-treated and tempered. Exclusive Stanley "Evertite" processed hickory handles are wedged securely in heads to stay . . . and stay tight.

Specify Stanley Hammers, the choice of skilled woodworkers everywhere. Put No. 52½ Nail Hammers on your next tool requisition. Stanley Tools, Educational Department, 182 Elm Street, New Britain, Connecticut.

THE TOOL BOX OF THE WORLD

STANLEY

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HARDWARE • HAND TOOLS • ELECTRIC TOOLS • STEEL STRAPPING

Better start doing this to part of your money

YOU KNOW how money is!

Today it's in your hand, and the next day it *isn't!*

A lot of people, however, have found an excellent way to make certain they will have money when they need it most.

They *salt* away part of their pay each week in U. S. Savings Bonds through the Payroll Savings Plan where they work.

They know that saving this way assures them of the money for a down payment on a new home . . . a new car . . . or retirement when the time comes.

Furthermore, in ten years they get back $4 for every $3 invested in U. S. Savings Bonds.

Why don't *YOU* start saving money *regularly* and *automatically* where you work, or at your bank through the Bond-A-Month Plan?

Automatic saving is <u>sure</u> saving— U.S. Savings Bonds

Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.

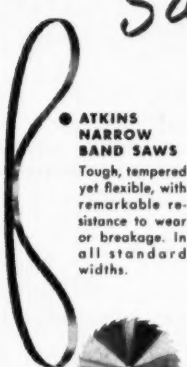
Tomorrow's **BETTER CRAFTSMAN NEEDS** *Today's* **BEST SAWS**

● ATKINS NO. 65

Extra tough — for tough classroom service! Balanced taper ground polished blade. "Perfection" handle prevents wrist strain. Straight back, ship point. 20, 24 and 26-in. lengths. Rip and cut-off.

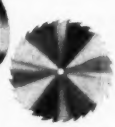
ATKINS

"Silver Steel" **SAWS**



● ATKINS NARROW BAND SAWS

Tough, tempered yet flexible, with remarkable resistance to wear or breakage. In all standard widths.



● ATKINS CIRCULAR SAWS

Made to stand up under hard usage of inexperienced students. For all types of machines, rip, cut-off, mitre or combination.

Teach the student the "feel" of a good saw and he'll be a better craftsman all his life. He'll learn faster and do better work right from the start. And hundreds of schools have proved that the best saws to accomplish this are those identified by the ATKINS "Silver Steel" Trade Mark. There *are* no finer saws — no saws that last longer with less servicing — no saws that cut easier or faster or are more economical for classroom use. From any point of view, the *right* saws for *your* school are ATKINS "Silver Steel" Saws. Make sure they are the ones you specify and get!

There's an ATKINS "Silver Steel" Saw for Every Classroom Use

ATKINS "ATKINS ALWAYS AHEAD"

E. C. ATKINS AND COMPANY
Home Office and Factory
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Atlanta • Chicago • New Orleans • New York

OF ALL FINE SAWS, THE FINEST ARE "SILVER STEEL" SAWS

What they are saying about SPLIT BAMBOO ROD BUILDING PROJECTS

We have received hundreds of enthusiastic comments and testimonials on our Rod Building Kits. Here are excerpts from a few of them—

"Has been a great help to me as well as the boys." R.M.K.—Illinois

". . . Must commend you for making kits such as these available." A.G.H.—California

"Thanking you again for bamboo rods at such reasonable prices." C.P.—New York

". . . My enthusiastic approval of your excellent rod kits. The Rod and Reel Club boys have been more than happy." W.E.J.—Massachusetts

". . . Creating quite a sensation in my department." D.C.W.—Oregon

"Instruction sheet extremely well written and, as a result, the rods came out fine." L.W.P.—Oklahoma

". . . Would say the rod compared to one retailing for about $40." R.L.M.—Ohio

"The materials are excellent." H.W.O.—Minnesota

". . . Thanking you for your excellent service, so here's another." P.A.W.—Pennsylvania

". . . Our Junior Rifle Club . . . all well pleased with kits and the finished product." J.R.B.—New York

Plan to include our split bamboo rod building kits in your spring program. You will find it a stimulating instructive project for your students . . . age 12 to 60.

EMPIRE
ROD BUILDING KITS

MAIL THIS COUPON FOR COMPLETE INFORMATION

EMPIRE TACKLE COMPANY, INC.
8 Genesee Street, New Hartford, N.Y.

Please send me complete information, price list and sample instructions

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Ford to Make Awards for Winning Projects in Industrial Arts

THE Ford Motor Company has announced that it will take over the national industrial-arts award program which has been relinquished after three years of successful operation by Scholastic Magazines. The latter gave up the annual program because interest in it had developed to such an extent that it was beyond the capacities of the magazine to handle it. Under the new set-up, the amount of money to be awarded in each division will be increased, according to the company.

Students in industrial-arts and vocational classes in grades seven through 12 may enter the contests, which will be in the following divisions: woodworking, metal work, mechanical drawing, printing, model making, plastics, machine shop, and electrical shop. Entries must be class projects which have been produced in the school shop under the supervision of an instructor.

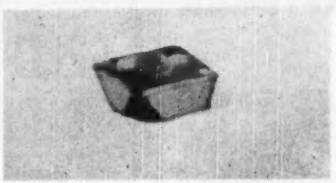
A statement was issued by Henry Ford II, president of Ford Motor Company, in which he pointed out that the awards have been very popular with both students and teachers in industrial arts. "We consider it a real opportunity to help the nation's youth by promoting a greater appreciation for the industrial arts and developing pride of workmanship which is so vital to the future of American industry," Mr. Ford said, adding that the industrial-arts students of today are the workers, foremen, supervisors, and executives of tomorrow.

The awards program will be conducted along very much the same lines as it was during the first three years of its existence under the Scholastic organization. As yet, final details as to time and place of judging the entries have not been worked out. George H. Fern, director of the awards since the beginning, will continue as consultant. A committee of 36 prominent educators will continue to serve in an advisory capacity.

The Ford company urges that students and teachers begin now to work on the projects which they will submit for the contest. Rule books and other information may be obtained by writing to Industrial Arts Awards, Ford Motor Co., 3000 Schaefer Rd., Dearborn, Mich.

Copper Ashtray

A Good Project for Neophytes



By Denham R. Griffin

Beginning students in bench metalwork will find this a stimulating project. It incorporates layout work and many hand-tool processes. The design gives an interesting appearance of solid metal. The author teaches at the Nichols Junior High School, Mt. Vernon, N. Y.

TESTED PROJECT

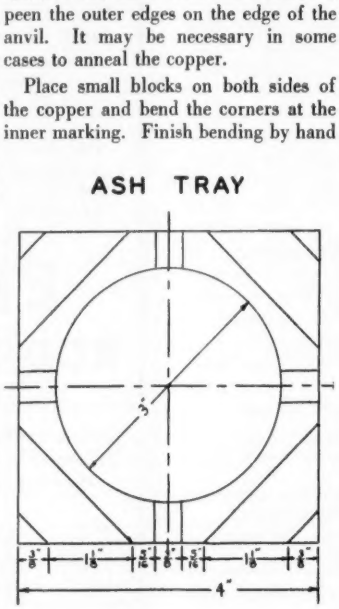
THIS simple copper ash tray is a good starting project for beginners in art-metal work. It incorporates various metal-working technics and tools and, at the same time, uses a minimum of material.

The copper is first laid out with a rule and scratch awl as shown in the drawing. It is then cut out with a pair of tin snips. The edges should next be smoothed with a file. Two scraps of softwood should be used to protect the metal when it is placed in the machinist's vise. From the corners, lay out and centerpunch marks ⅛" from the edges. Drill these on the drill press. A hand drill may be used but small drills will last many times longer on the drill press. The copper is centered on the form and the brads driven in the corners to hold the work in position.

A medium-sized ball-peen hammer is used. Start hammering with the peen end in the center of the stock, working in a circle until the outer edge is reached. Remove the stock from the form and peen the outer edges on the edge of the anvil. It may be necessary in some cases to anneal the copper.

Place small blocks on both sides of the copper and bend the corners at the inner marking. Finish bending by hand after removing from the vise. Bend the small tips with a pair of pliers. The cigarette rests are hammered in with a ⅜" bar on a form made by drilling a hole ⅜" in diameter in scrap stock and then cutting it in half.

ASH TRAY



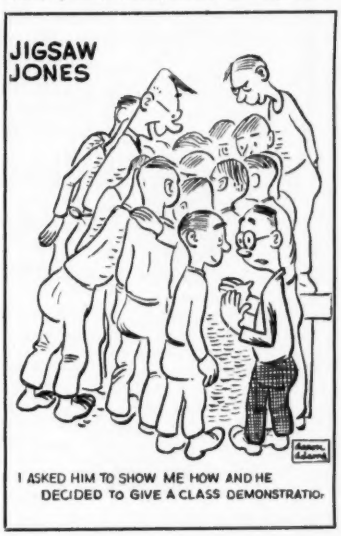
Bill of Materials

- Wooden form, hard wood prepared on lathe with cutout 3" in diameter by ½" deep
- Copper, 18 gage, 4" x 4"
- Steel wool #000
- Tripoli
- Lacquer
- Brads

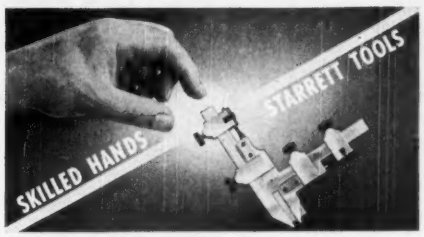
Clean completely with steel wool. Buff with tripoli and wash with warm water and soap. Dry and apply lacquer. Glue cloth pads to the feet or apply flocking.

SCHOOL SHOP's Cartoon Feature

Drawn by Aaron Adams, Marion, Ind., High School



UNBEATABLE COMBINATION



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Copyholder . . .

from page 6

take a thinner piece and hinge it to the holder. If the hinges are properly placed, the support will be at right angles to the holder when it is opened as far as it will go. When not in use, it can be folded flat against the face. This can be accomplished by having one side of each hinge mortised into the face of the holder and the other side mortised into what will be the top side of the support when in use.

To hold the pages of a book from turning we can employ the principle of the turn buttons used to hold window-screens. Make them of the same material as the support and have the width match its thickness. Countersink screws for fasteners.

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No.	Name	No. Req.	Size
1	Base	1	5/8" x 10" x 12"
2	Holder	1	5/8" x 10" x 12"
3	Leg	1	3/8" x 1 3/16" x 8"
4	Support	1	3/8" x 1 1/2" x 10"
5	Turn Buttons	2	3/16"x3/8"x2 1/2"
Brass Hinges		3	1"
Brass Hinges		2	3/4"

A suggestion or two to those who wish to follow these plans. The base and holder will be more easily brought to a true surface if it is done in one piece about 25" long, cut in two, and squared to the exact dimensions. The same applies to the leg, support, and turn buttons. Finish down a piece about 19" long to 3/8" thickness and 1½" width and cut off enough to make the support. A little will have to be ripped off the remainder to make the leg, but that can be the material from which we make the turn buttons. All hinges should be plain brass butt hinges.

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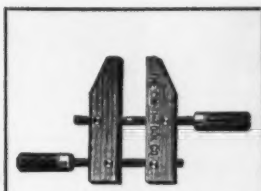

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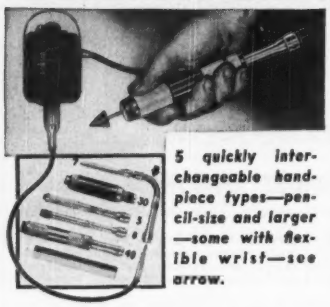

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Instructional RESOURCES

Shop Safety Education. Jehring and Theurer. Albany, N. Y.: Delmar Publishers, Inc., 1949. Pp. xiv+336. $2.55 (plastic); $3.30 (cloth).

The subtitle of this publication which was prepared jointly by the New York State Education Department's Vocational Curriculum Development and Industrial Teacher Training Bureau and the New York State School of Industrial and Labor Relations, Cornell University, is *Training for Accident Prevention in the Home, in Industry, and on the Farm.* The aim is to provide shop teachers with tested accident prevention technics which they can pass on to their students. Students, it is expected, will have no difficulty retaining these habits while passing from school-shop situations to industry.

J. James Jehring is Assistant Professor, New York State School of Industrial and Labor Relations, Cornell University, Ithaca, and Frederick Theurer is Supervisor of Vocational Education, Buffalo, New York. These two directed the preparation of the book.

Machinery's Handbook (fourteenth edition). Oberg and Jones. New York: The Industrial Press, 1949. Pp. 1911. $5.76 (teachers); $7.00 (others).

Good news for machine-shop teachers in the release of the new edition of this standby of the shop man. There are numerous additions including a section of the new (last year) Unified Thread Series which was worked out among representatives of the United Kingdom, Canada, and this country to provide screw-thread interchangeability.

Practical Television Servicing and Trouble Shooting Manual. Chicago, Ill.: Coyne Electrical and Radio-Television School, 1949. Pp. 392. $4.25.

The technical staff of the Coyne School prepared this practical book on TV. There are about 300 illustrations of various types including photos and diagrams of up-to-the-minute information on servicing and trouble-shooting technics. As color television seems to be just around the corner, the publishers have included a thorough-going discussion of the properties and equipment of color TV. This section is presented in four colors for greater understanding of the problems involved.

Weld Design. Churchill and Austin. New York: Prentice-Hall, Inc., 1949. Pp. viii+216. $5.00.

Information has been needed for some time, say the authors, on welded machine-base design. Industry has now recognized the value of electric arc welding in machine design execution. Design is stressed in the volume and it is suggested that a manual on welding be consulted for the needed information on technic.

Appendixes present material on stress design and there is a bibliography of literature in the field. The book is notable for having been recommended for publication by the textbook award program of the James F. Lincoln Arc-Welding Foundation, Cleveland, Ohio.

Harry D. Churchill is Professor of Engineering Mechanics, Case Institute of Technology, Cleveland, Ohio, and John B. Austin is a welding engineer with the Republic Structural Iron Works.

Television for Radiomen. Noll. New York: The Macmillan Co., 1949. Pp. xii+595. $7.00.

The author of this work attacks the problem of how to fit TV (which he says "is not an involved, difficult subject") in its many elements into an easily-understood system. The book is suitable for practical radiomen and for students in the last stages of study. It assumes a basic knowledge of radio circuits on to which may be added the specifics of television.

Edward M. Noll is Television Instructor at Temple University's Technical Institute, Philadelphia, Pa.

Jewelry Making and Design. Rose and Cirino. Worcester, Mass.: The Davis Press, 1949. Pp. xii+300. $8.95.

This standard work has been revised and re-edited. It is a handbook for teachers, students, and beginning craftsmen. Divided into two parts, the first of which concerns the making of jewelry and the second of which stresses design, the book is beautifully illustrated. The progress in both sections is from the simple to the complex and there are challenging projects for all.

Augustus F. Rose was Director of Manual Arts, Providence, R. I., public schools, and Antonio Cirino was formerly head of the Division of Teacher Education, Rhode Island School of Design, Providence.

Aviation Study Manual (vol. 1, book II). Washington, D. C.: Civil Air Patrol, 1949. Pp. vi+12 units.

The national headquarters on the CAP has released this important work on training for the Air Age. Units included are: Our Air Age; Know Your Airplane; Why the Airplane Flies; Power for Flight; The Airplane and the Airman; Weather; The Path of Flight (aerial navigation); Communications and Control; National and International Problems of Safety and Control; Airports; Vocational Opportunities in Aviation; and Aviation Terms.

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Pamphlets:

Suggested Problems for Research Study in Vocational and Industrial Arts Education is a publication of the Committee on Research and Publications of the American Vocational Association, Inc. It represents 1944's mimeographed *Problems in Vocational Education Suggested for Research Study* in up-to-date form. Research areas suggested by the Committee are divided into the several vocational-education fields. Copies of the pamphlet may be obtained for 25c each by writing to the AVA at 1010 Vermont Ave., N. W., Washington 5, D. C.

Service Areas for Vocational Schools is a publication of the Committee on Research and Publications of the AVA. It is designed to point up the fact that vocational fitness can be forwarded by the increase in emphasis on locally-controlled area vocational programs. The programs as conceived in this pamphlet are not aimed at interference with other educational agencies but are rather for "coalition of local educational administrative units within the public, county or state school system . . . . an adjustment, extension, and supplement to existing activities and not a displacement, replacement, or duplication." The cost of this pamphlet is 25c and it may be secured from the AVA at 1010 Vermont Ave., N.W., Washington 5, D.C.

Orientation to School and Work is a publication of the Board of Education of the City of New York and is subtitled *Resource Units for High School Group Guidance*. It gives practical tips for teachers to use in aiding students to plan well their academic programs and their vocational training. The principles of group guidance and orientation are thoroughly explored and outlined. Suggestions for motivating students to perform well in the various subject-matter fields are included. There is a good bibliography on guidance and personality development at the end.

Ponderosa Pine—Its Properties, Uses, and Grades is a booklet offered by the Western Pine Association. In it are described the grades and types of ponderosa, "the pick of the pines." Included are full-page photographs of typical pieces of each grade together with descriptions of each. Write to Department PD, Western Pine Association, 510 Yeon Bldg., Portland 4, Ore., for a copy.

Visuals:

Craftsmanship in Clay: Simple Slab Methods is a 16mm, sound-motion picture in color which has been produced by the Audio-Visual Center at Indiana University, Bloomington. It presents information on the production of attractive pottery pieces from clay. The film may be purchased at the Educational Film Library Association, Inc., Suite 1000, 1600 Broadway, New York 19, N. Y., or from the Indiana Center for $75. For rental, write your own film library or the Center.

Motion Picture Catalog is offered by the Shell Oil Company. It contains information on the films about oil and scientific principles which may be borrowed by responsible groups. Information on the conditions of borrowing and location of lending agencies are included in the booklet. Copies of the catalog may be obtained by writing to Shell Public Relations Dept., 50 West 50th St., N. Y. 20, N. Y.

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News from INDUSTRY

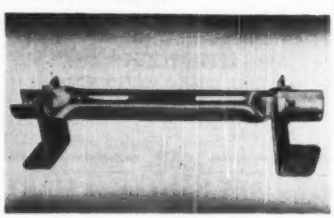
Course On Carbide Tools Available

A course specifically designed for educational institutions—covering the design, selection, use and maintenance of cemented carbide tools—has recently been announced by the Carboloy Company of Detroit, Michigan.

Vital changes in industrial methods usually bring with them the necessity of revising vocational courses to provide students with the new background required. So-called industrial training courses—designed primarily for upgrading education within industry—rarely are suitable for school use. While based on the experience of industry, the new Carboloy course was developed by men whose primary background was in educational work. Shown in the illustration are these men from left to right, seated: Gordon Rivers, Professor of Industrial Education, Wayne University, Detroit; A. C. Good, Professor of Industrial Education, Wayne University; Robert G. Brierly, Carboloy Co., former industrial-arts teacher; Roland Frazer, Principal, George Washington Trade School, Detroit. Standing, left to right, are: K. R. Beardslee, Vice President and Marketing Manager, Carboloy Co., and J. M. Bertotti, Manager of Training, Carboloy Co., former school principal.

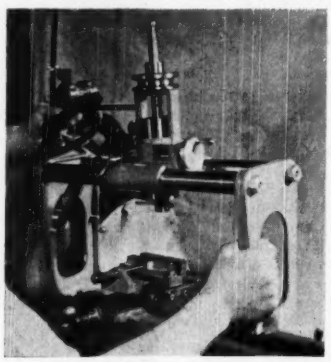
The course, available to schools without charge (except for slide films at approximate print cost), can be used as a supplement to present courses. All necessary teaching materials are provided, including student work sheets, instructors' kits and work plans, visual and "home-study" material, etc. For complete information as to availability, write the Carboloy Co., Inc., Detroit 32, Michigan; *or check no. 32 on the coupon.*

V-W Motor Mount



The Vermont Woodworker Co., Bennington, Vermont, has recently placed on the market a motor mount for small motors up to 1 H.P. The principle involved is that of hinging the motor on the front of the base, allowing part of the weight of the motor to be taken up by the belt. A very important feature is that while the motor is locked in place, by rotating it to a vertical position it can be readily removed. It is impossible for the motor to jump out of the supporting brackets. This rotation principle permits quick speed change, uniform belt tension, uniform power, and permits use of one motor, pulley, belt, etc., for several machines. An informative brochure may be obtained from the manufacturer; *or by checking no. 33 on the coupon.*

Milling Attachment for Bench Lathes



Most school shops have one or more bench lathes, but because of the cost involved, many do not have milling machines. An answer to this problem is the Palmer vertical milling attachment. This unit, very economically priced, can be installed in a few minutes by any student.

It will do any milling job that can be accomplished on a bench-type milling machine. It does precision work. It makes cuts 8" long on the longitudinal feed of the lathe and half that distance on the cross feed. Will take stock up to 3" in diameter. Up to 1" end mills and up to 2½" circular cutters can be used. The unit can also be used for surface grinding. Cuts keyways, slots, dovetails, T-slots, vees, splines. Its versatility makes it a highly practical tool for school shops. Free literature may be secured by writing Palmer Industries, 6147 S. Sangamon St., Chicago 21, Illinois, mentioning SCHOOL SHOP; *or by checking no. 34 on the coupon.*

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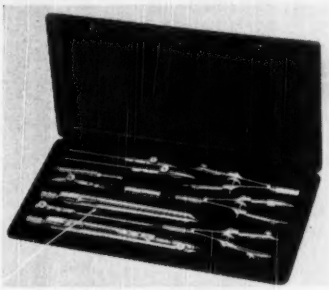

The Borden and Riley Paper Co., Inc., New York City, known for many years in the drafting and engineering paper supply field, has been appointed exclusive American representative for the world renowned drafting instruments manufactured by the Kern Company, Ltd., of Switzerland.

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New Edition

Publication of the new and revised edition 49 of the book, *How to Run a Lathe*, is announced by the South Bend Lathe Works. Containing 128 pages and more than 350 illustrations on the care and operation of metalworking lathes, this book may be used as a reference by experienced machinists or as a text by the apprentice or shop student.

Eleven chapters cover various types of work. Available in paper binding at 25c, or in imitation leather at $1.00 a copy postpaid. Sample copies will be sent free to vocational directors and instructors. For group prices and sample copy write the South Bend Lathe Works, South Bend 22, Indiana; *or check no. 36 on the coupon.*

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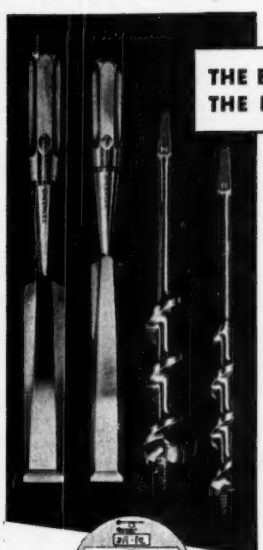

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Washington . . .

from page 32

out what goes into an adequate state set-up of trade and industrial instruction; to see whether each state training program measures up to standards agreed on by labor and educators; and to improve the trade and industrial education program where it needs bettering.

The projects are still in the planning stage; research into best ways to attack the problem is now going forward.

Probable result: healthier public relations with organized labor.

New Wage Floors.—When a student approaches you next June, says, "I want to work in a radio-assembling plant this summer," you should be able to tell him about the new minimum wage to help him safeguard his rights.

A new 75-cents-an-hour minimum rate went into effect January 25. Congress decided that 40 cents an hour just wasn't enough for jobs connected with interstate commerce—goods or services moving across state lines.

The best place to find out the details—whether and how the law affects young workers—is from your regional Wage and Hour and Public Contracts Division, Department of Labor. But here are some of the ways in which job-holding students may be affected:

Apprentices: This limited category is governed by regulations on sub-minimum wages in industries certified by the Labor Department's Bureau of Apprenticeship as apprentice-training industries. Where the Bureau has duly certified the employer, a sub-standard wage rate for the job would govern.

On-the-job trainees: This group is governed by student-learner regulations of the Department of Labor. Often special arrangements are made, to protect the learner's employment chances, so that the full minimum wage rate is not required to be paid. A school official usually acts as coordinator between the student and the part-time job, and he files the application for student-learner wage rates.

Students in work-experience programs: Only jobs in interstate commerce are affected. Youths under 16 must get certificates of exemption. They must also get certificates if the employer would pay them less than 75 cents an hour.

Each case involving under-age workers and a sub-minimum wage rate is decided individually by the Administrator in Washington under the Wage and Hour Law.

The VA Wants to Know.—From the Veterans Administration come these two reports which will interest shopmen:

1. Practices of profit-making schools offering veterans training or education facilities under the G.I. Bill are coming in for a fine-tooth-combing by the VA. Congress has asked the VA to report on: courses offered; date of founding (whether before or after June 22, 1944, when the veterans' training program began); tuition rates, overcharges, and money recouped by the VA; schools indulging in "inadequacies and irregularities."

The VA will also seek information on misleading advertising by schools and on dummy profit-making business firms set up to bilk the veterans' educational program.

VA spokesmen said they have heard many complaints about schools and firms offering watered-down services to ex-G. I.'s. They want to find out whether the reports are borne out by the facts, or are "just a lot of hot air."

2. Schools which believe they have been treated unfairly in the tuition and fee rates which the VA has allowed them till now, will take heart from a new appeals board set up by the agency. The newly created Veterans Tuition Appeals Board will be headed by Charles Manfred Thompson, dean emeritus of the College of Commerce and Business Administration, University of Illinois, Urbana, Lewis Kemper Williams, New Orleans, La., and Jo Zach Miller, Kansas City, Mo., are the other review board members.

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Job of the Board is to review tuition rates of profit schools dissatisfied with amounts previously negotiated between themselves and the VA. Hearings will be held in Washington, but Board members will take trips to schools out of this area to inspect their operations.

When applying for a Board hearing, the school must show that both it and the VA have exhausted all administrative means of settling the tuition disagreement. The Board's decision is the final administrative remedy, which may be backed up or overturned only by court appeal.

Bursinger Manages Oliver St. Louis Office

Roy E. Bursinger has been appointed manager of the big southern section served by the St. Louis office of the Oliver Machinery Co., located at 901 Commerce Bldg., St. Louis 2, Missouri.

Mr. Bursinger, with Oliver since 1929, succeeds George W. Crosley, who has retired after serving Oliver more than 40 years. Bursinger's many friends in the industrial-education field will agree that he was the logical choice for this important appointment.

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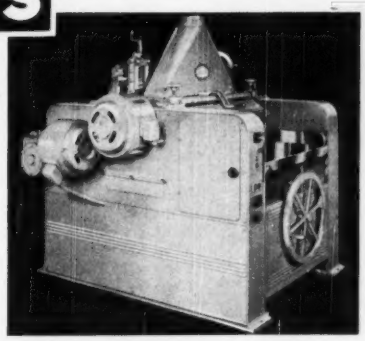

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FROM WASHINGTON

BY MICHAEL PACA

No Controversy.—Taking note of the discussion stimulated by Professor Diamond, on the place of industrial arts in the AVA, this column called AVA chieftain, L. H. Dennis, the executive secretary, for his reactions. As near as telephone wires can transmit words accurately this is what Mr. Dennis said:

"There has never been any controversy in the Association about industrial arts or its relative place among other vocational education programs. The AVA supports all programs. Our Executive Committee has one man from each field, and all help on policy formulation."

He attributed the SCHOOL SHOP discussion about AVA treatment of industrial arts to "influences outside of the AVA trying to stir up trouble."*

Mr. Dennis continued: "We have been sold on industrial-arts education for many years. It has a definite place in general education, and it is basic to more specific trade training. Industrial-arts instruction, with its hobby interest possibilities, should necessarily come first, before specialized job training can take place."

In response to allegations by certain individuals of unfair treatment of industrial-arts instructors in the AVA, Mr. Dennis said, "No group within the AVA is being discriminated against; all have equal treatment and all are equally recognized. Industrial-arts teachers are very active in the Association's affairs. There is only the most friendly, cooperative, and wholesome situation and attitude within the AVA."

While on the telephone, Mr. Dennis took occasion to point to two documents to be available from the AVA offices:

1. The first describes an attempt to get more effective cooperation among vocational teachers, the apprenticeship program, labor, and industry. It can be found in the January issue of the *American Vocational Journal*, under the title of "Practices of Apprenticeship." A committee created two years ago under AVA auspices has outlined the operation of successful apprenticeship training programs. It was concerned with preventing duplication and overlapping of action, and with doing away with friction among the various agencies dealing with apprenticeship. The committee recommends proper functions of each group and suggests how their actions should dovetail for best efficiency.

2. Life-adjustment education for youth, especially industrial arts and vocational instruction in relation to general education, will be dealt with in a bulletin to be published about the first of next month by the AVA's Life-Adjustment Committee. Dr. J. C. Wright, former U.S. Assistant Commissioner of Education for Vocational Education, heads this seven-man AVA group.

Working with the Commission on Life Adjustment appointed by the U.S. Office of Education, the committee will investigate the mixture of academic and vocational training most useful to students who plan to be "neither professors nor bricklayers—that is neither professionals nor skilled workers." Their bulletin will not deal with school administration or organization. It will try to develop a flexible pattern for an education to fit the general student who does not plan to enter a skilled trade and whose formal education will end with high school.

The AFL and Vocational Education.—The American Federation of Labor, long worried over its lack of influence in trade- and industrial-education circles, has at last found a way in. Wheels have started turning to put into effect a cooperative AFL-U.S. plan to study four state programs of trade and industrial instruction.

One recent statement from the AFL read: "Labor has a profound responsibility at this time in seeking to have public attention focused carefully on the standards and objectives involved in a program of vocational education. We must critically review the entire place of practical training on the nation's educational program, and then outline the steps to be taken in the future."

The AFL wants to make sure that the purpose of vocational education is clearly defined, especially its relationship to general education. A Federation spokesman deplored that federal funds allocated for vocational training have been used to separate such instruction from total education, rather than helping to link the two.

The AFL and the federal Division of Vocational Education will work in cooperation with Boards of Vocational Education in Alabama, California, Michigan, New Jersey. Three main purposes have been stated for the survey: to find

(*Continued on page* 30)

*EDITOR'S NOTE: One of the functions of an independent professional magazine is to report viewpoints which may not be able to find expression elsewhere. The statements in SCHOOL SHOP were reflections of well-known attitudes of some members of the AVA and were made by members of the Association.

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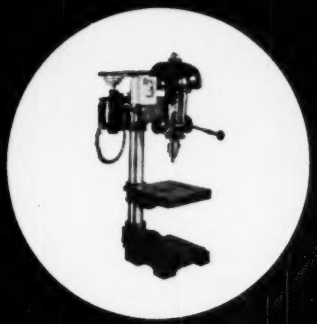
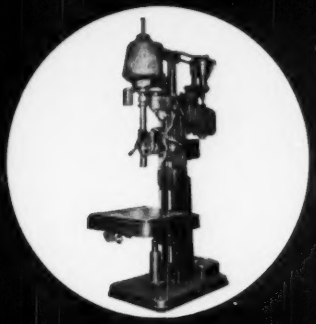
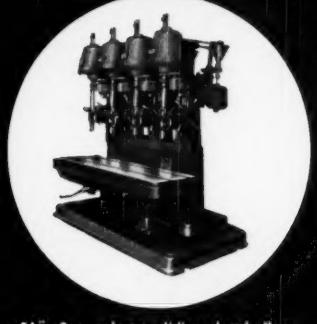


16" Royal sensitive bench and floor drill, single and multiple spindles. Bulletin 216.



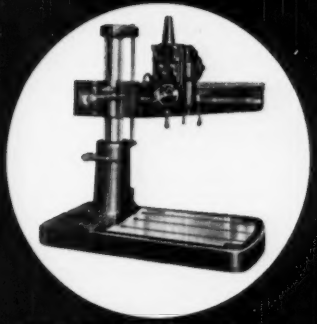
21" Box column sliding head floor drill, single spindle. Bulletin 100A.

16" Box column sliding bench and floor drill, single spindle. Bulletin 155V, 119, 215.

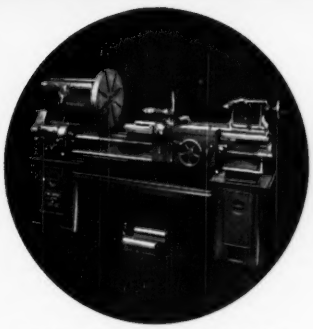


21" Box column sliding head floor drill, multiple spindle. Bulletin 100A.

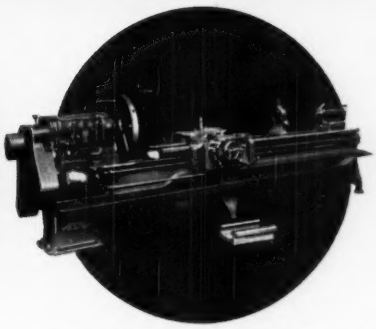
18" Royal sensitive bench and floor drill, single and multiple spindle. Bulletin 218.



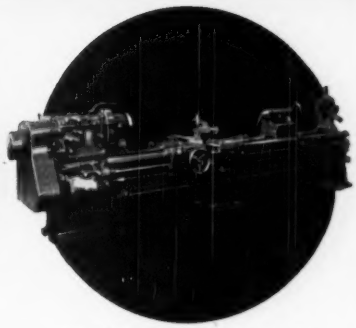
Radial drills—3', 4', 5' arms; 7", 9" and 11" column. Bulletins 116 and CO-15.



Tray-top fixed gap bed Engine Lathes —15 & 18 swing sizes. Bulletin T-100



Standard fixed gap bed Engine Lathes—14, 16, 18, 20, 22 & 24 swing sizes. Bulletin S-100



Standard Engine Lathes—14, 16, 18, 20, 22 & 24 swing sizes. Bulletin S-100

Tray-top Engine & Toolroom Lathes—10, 12½, 15 & 18 swing sizes. Bulletin T-100

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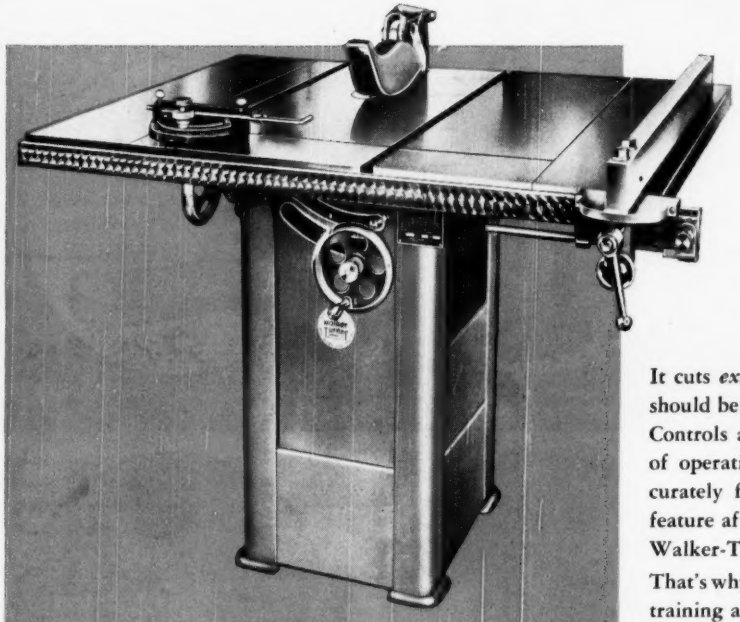

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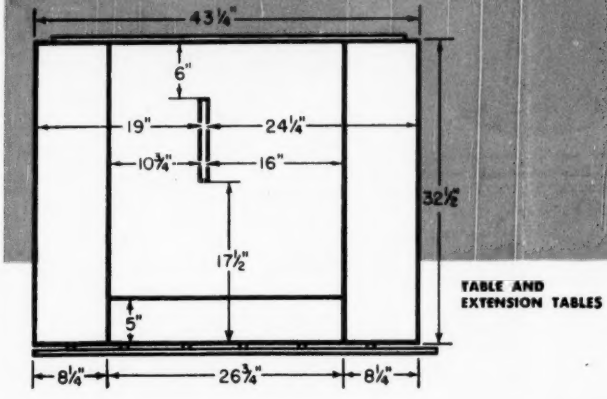

TABLE AND EXTENSION TABLES

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